Minot Safe Routes to School Study

January 2010
R09015.00

ACKERMAN-ESTVOLD
engineering and management consulting, inc.

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EXECUTIVE SUMMARY

The purpose of the Minot Safe Routes to School Study is to inventory existing safe routes to school for Minot elementary students and to identify and prioritize infrastructure improvements needed to expand the safe routes networks. Schools included in the study are Bel Air, Edison, Lewis & Clark, Lincoln, Longfellow, McKinley, Perkett, Roosevelt, Sunnyside, and Washington.

In order to understand how students travel to and from school and to have complete knowledge of the current safe routes networks surrounding each elementary school, Ackerman-Estvold conducted student surveys, observed pick-up or drop-off patterns at each school, and inventoried infrastructure around the schools. This data was used to analyze the existing safe routes networks surrounding each school. Ackerman-Estvold's analysis resulted in 46 recommended improvements to create more complete safe routes networks surrounding each Minot elementary school; improvements range from minor signing improvements to fairly extensive sidewalk installation.

The minor recommended improvements list consists of low-cost, maintenance-type activities that can be completed using City forces or contracted for and financed utilizing budgeted maintenance funds. Twenty minor improvements resulted; the cost of these improvements is less than $1,000 each, although most are less than $200.

Those projects requiring possible City Council action, federal or state funding program participation, or more extensive warranting analysis are considered major improvements. The 24 recommended major improvements, totaling $1.6 million, were ranked using a number of criteria such as proximity to the school, potential number of students that will benefit, importance to a school's overall safe routes network, and cost-benefit ratio. In addition to the minor and major improvements, the removal of two existing school crossings was recommended.

Although this study focused on the safe routes infrastructure between a school and a student's home, the second component of a safe routes network is the travel route into the building once a student reaches the school grounds. On-site school grounds observations revealed that site design, traffic patterns, parking and other factors have a direct impact on the safety of students. To address the on-site issues related to school trip safety, it is recommended that the Minot School District evaluate each of the elementary schools with regard to faculty/staff parking, paths for students to enter the school, bike rack placement, and pick-up and drop-off patterns. It is also recommended that the City regularly review city bus routes and schedules to ensure that the City Bus is providing safe and convenient service to students.

Funding for Safe Routes to School improvements may be available from a number of sources including city sales tax revenue, the Federal Highway Administration's Safe Routes to School program, Transportation Enhancement funding through the NDDOT, the Minot School District, the North Dakota Safety Council's Safe Kids North Dakota coalition, and non-governmental sources or various Minot community resources.

Although this study focused on infrastructure (engineering) improvements relating to safe routes to school, the most successful way to increase walking and biking to school is through a comprehensive approach that includes engineering, education, enforcement, encouragement, and evaluation.

INTRODUCTION

The purpose of the Minot Safe Routes to School Study is to inventory existing safe routes to school for elementary students in Minot and to identify and prioritize infrastructure improvements needed to expand the safe routes networks. Schools included in the study are Bel Air, Edison, Lewis & Clark, Lincoln, Longfellow, McKinley, Perkett, Roosevelt, Sunnyside, and Washington.

Minot Catholic Schools was contacted prior to beginning the study and opted not to be involved because its students are primarily driven to school due to the distance between the elementary schools and the students' homes. Our Redeemer's Christian School (ORCS) is located in close proximity to Washington Elementary, so this study's recommendations for Washington Elementary affect Our Redeemer's Christian School as well.

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STUDY APPROACH

To understand how students travel to and from school and to gain complete knowledge of the current safe routes networks surrounding each elementary school, Ackerman-Estvold conducted student surveys, observed pick-up and drop-off patterns at each school, and inventoried existing safe routes infrastructure around the schools.

Safe Routes to School Student Arrival and Departure Tally Sheets (sample in Appendix I) were completed in 115 classrooms in the Minot Public Schools' elementary schools and in grades K-6 at Our Redeemer's Christian School. Information obtained through these surveys included school, grade, number of enrolled students, and number of students utilizing various methods of transportation to and from school on various days of the week. Although the data obtained from these tally sheets is from a snapshot in time during the spring of 2009, it provided an overview of conditions and suggested specific conditions to further research. Survey responses indicated that students do use a variety of transportation methods to/from school: walk, bike, bus, family vehicle, and carpool. During the mostly sunny spring days that these surveys were completed, an average of 17% of students walked to school. In general, it was determined that the older the students were, the more they walked and biked to school and, consequently, the less often they were transported in a family vehicle. Compared to other schools, more McKinley students walked or biked to/from school, more students were transported in a family vehicle at Lincoln, more Sunnyside students rode the City Bus, and more Perkett students carpooled than just riding in a family vehicle. Another response was that more Our Redeemer's students rode in a family vehicle than at other schools; this was anticipated, considering Our Redeemer's students do not have an attendance boundary area. Additional survey data can be found in Appendix I.

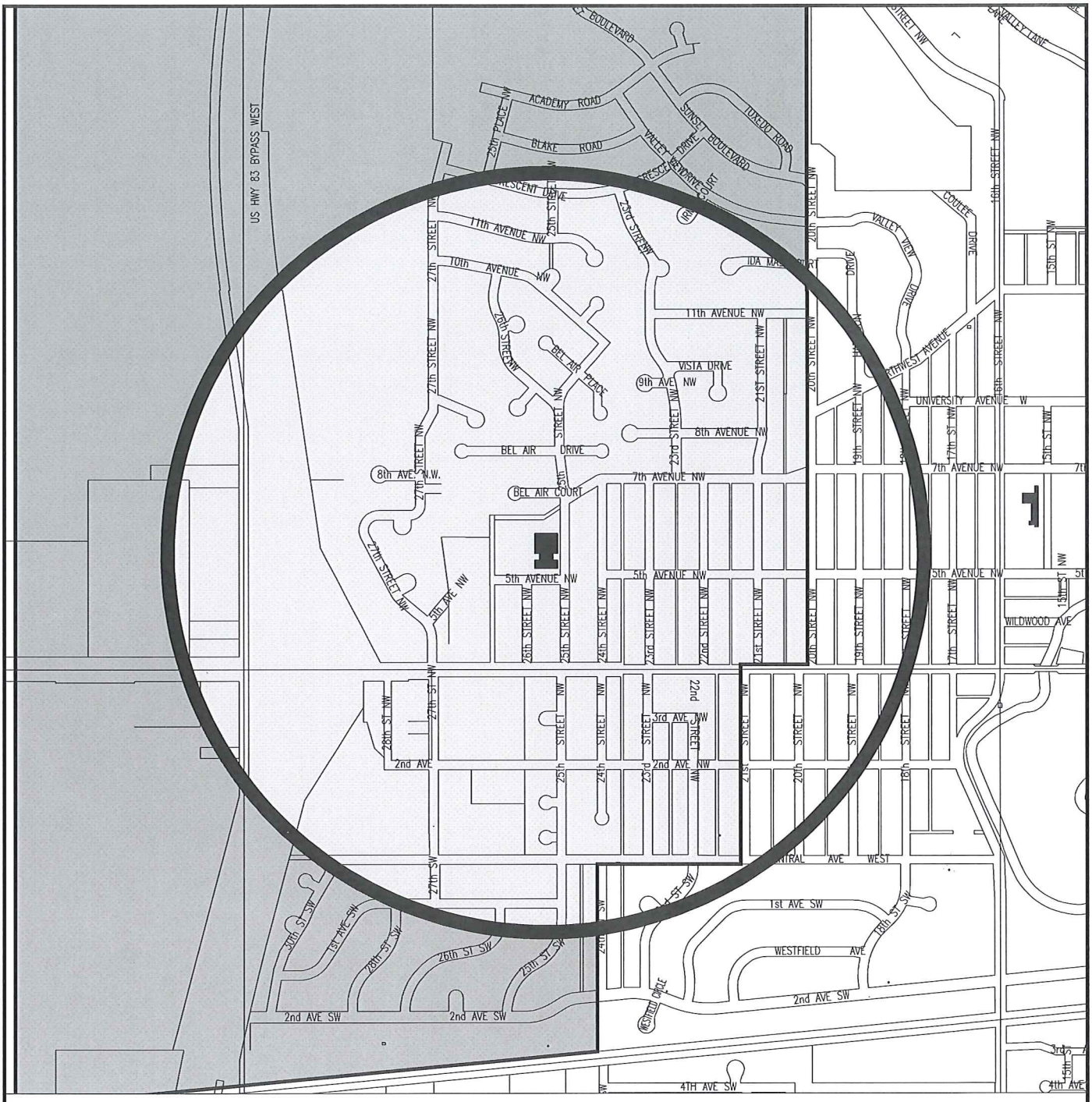
In addition to the student travel surveys, engineering technicians observed either arrival or departure conditions at each school involved in the study. These technicians also documented safe routes infrastructure conditions within the school boundaries, which was critical information to have during the safe routes analysis process. The Observation Summary Sheet utilized by the engineering technicians can be found in Appendix I. Appendix I also includes school enrollment and grade distribution numbers, as well as school schedules.

Once surveys and observations were completed, this data was utilized to begin an analysis of safe routes for each school. The initial step in the analysis was to define what constitutes a Safe Route to School. There are a number of factors that must be considered when evaluating existing school safe routes and when attempting to create additional safe routes. While traffic engineers can determine all of the infrastructure needed to map out a safe route, the ultimate test of the route's effectiveness is how safe a student feels while using the route, and, more importantly, how confident the student's parents are that the child can walk or bicycle to school safely. Although the Safe Routes to School program includes engineering, education, enforcement, encouragement, and evaluation components, this Minot Safe Routes to School Study concentrated on infrastructure (engineering) improvements. In this regard, the study focused on two safe routes elements: (1) the trip from home to the school grounds and (2) the travel route into the building once a student reaches the school grounds.

For each school included in the study, the area to be analyzed was defined. The Minot School District has outlined a school attendance area for each of the 10 elementary schools. This attendance area was determined based on school location, proximity to other schools, and school capacity. Our Redeemer's Christian School has open enrollment, so determination of school boundaries wasn't necessary.

The reasonable distance an elementary school student can be expected to walk or bicycle to school depends on age, weather conditions, terrain, and other factors. For study analysis purposes, it was decided that maximum reasonably cost-effective walking distance was one-half mile. Therefore, infrastructure improvements beyond one-half mile from the school would not provide a sufficient cost-benefit ratio to warrant consideration.

The following Safe Routes Study Area figures illustrate the defined school attendance area in dark gray, the one-half mile radius surrounding each school, and the overlapping study area in light gray.



- SAFE ROUTES STUDY AREA -

BEL AIR SCHOOL

SCALE: 1"=1000'

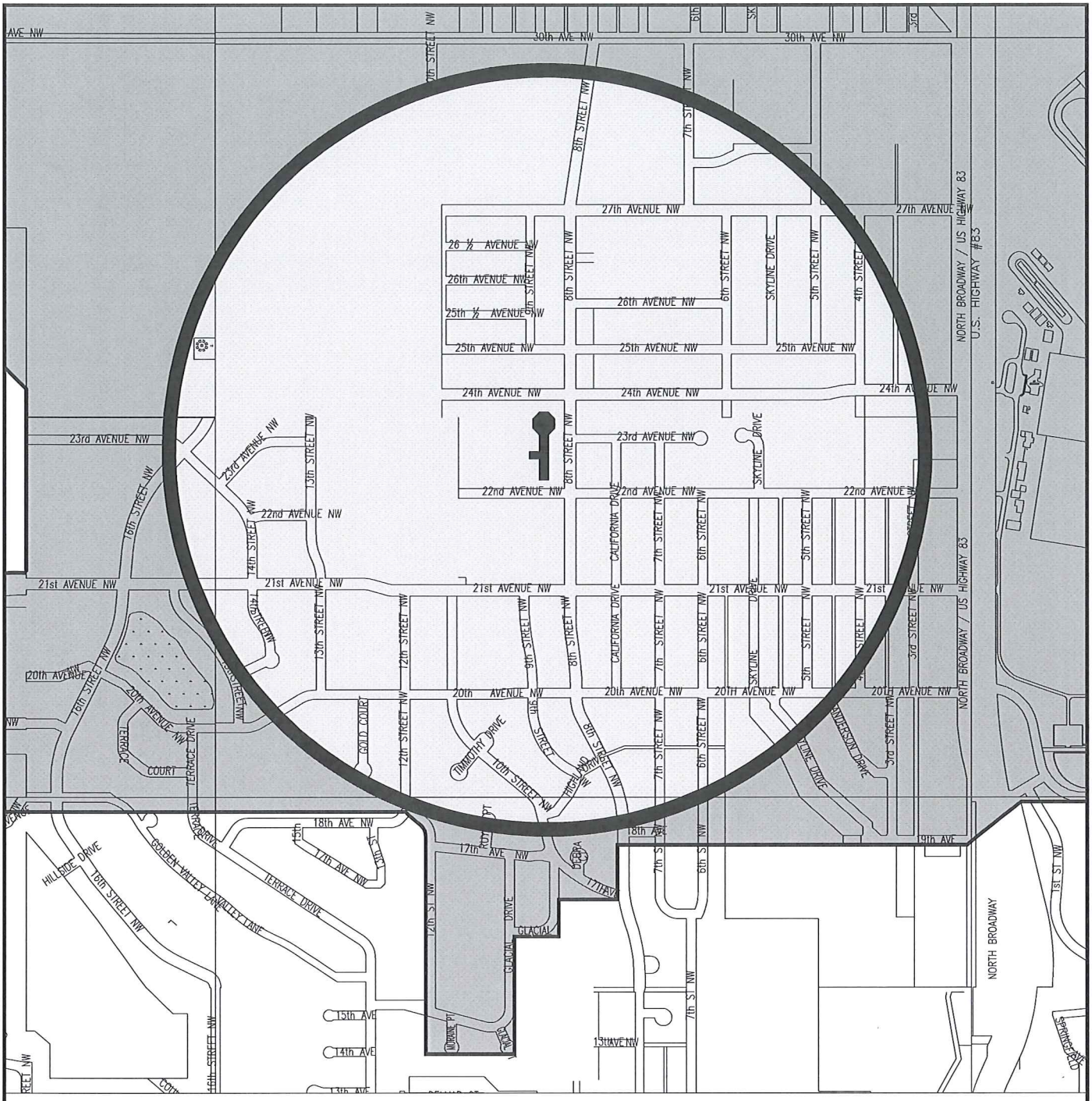
PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. © 2009, ACKERMAN-ESTVOLD ENGINEERING AND MANAGEMENT CONSULTING, INC. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION	FIGURE 1

- SAFE ROUTES STUDY AREA -

EDISON SCHOOL

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 2



- SAFE ROUTES STUDY AREA -

LEWIS & CLARK SCHOOL

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION	FIGURE 3

- SAFE ROUTES STUDY AREA -

LINCOLN SCHOOL

SCALE: 1"=1000'

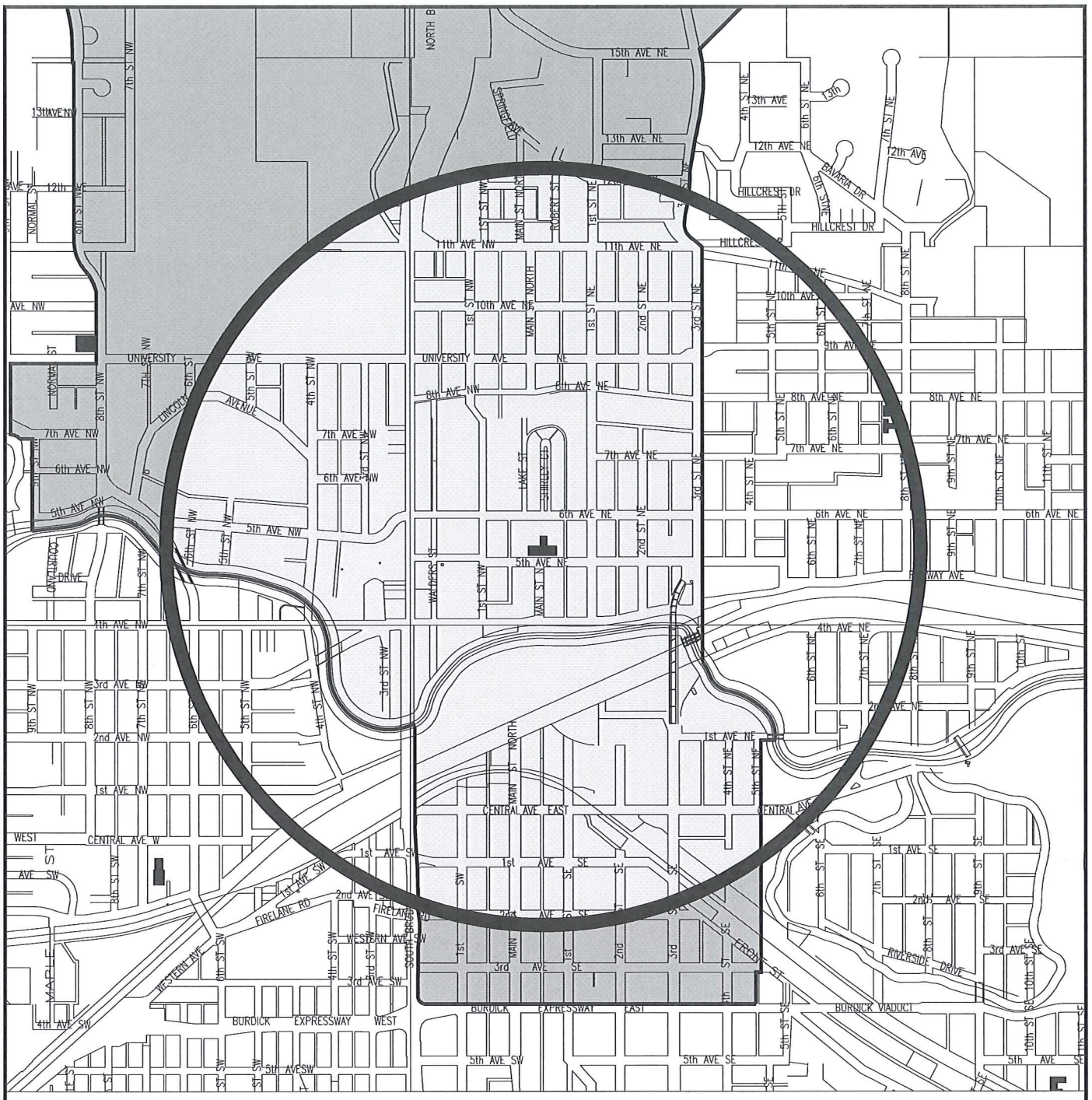
PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION	FIGURE 4

- SAFE ROUTES STUDY AREA -

LONGFELLOW SCHOOL

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION	FIGURE 5



- SAFE ROUTES STUDY AREA -

McKINLEY SCHOOL

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 6

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CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION

- SAFE ROUTES STUDY AREA -

PERKETT SCHOOL

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 7

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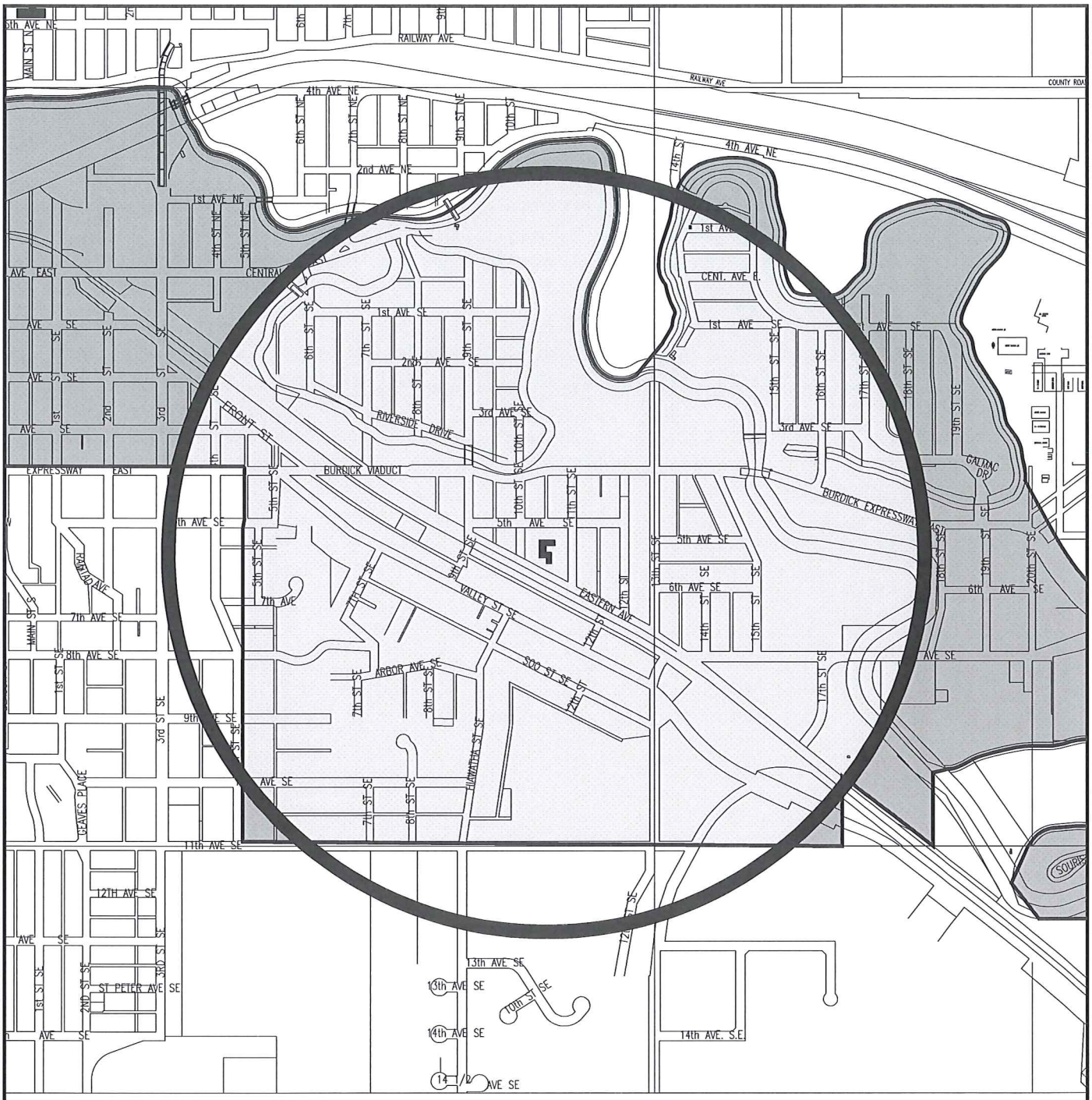
CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION

- SAFE ROUTES STUDY AREA -

ROOSEVELT SCHOOL

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION	FIGURE 8



- SAFE ROUTES STUDY AREA -

SUNNYSIDE SCHOOL

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 9

6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737
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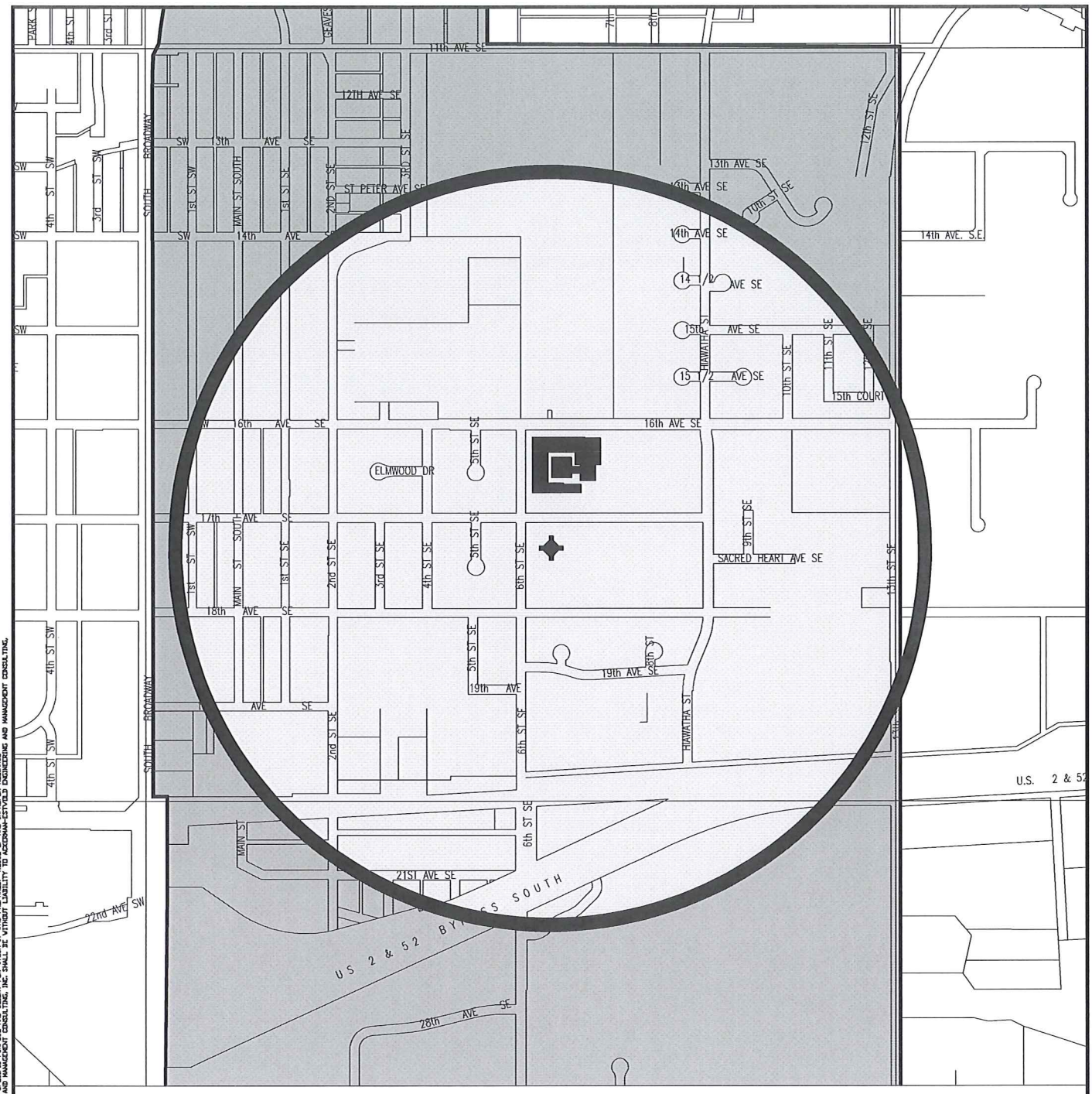


- SAFE ROUTES STUDY AREA -

WASHINGTON / ORCS SCHOOL

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION	FIGURE 10

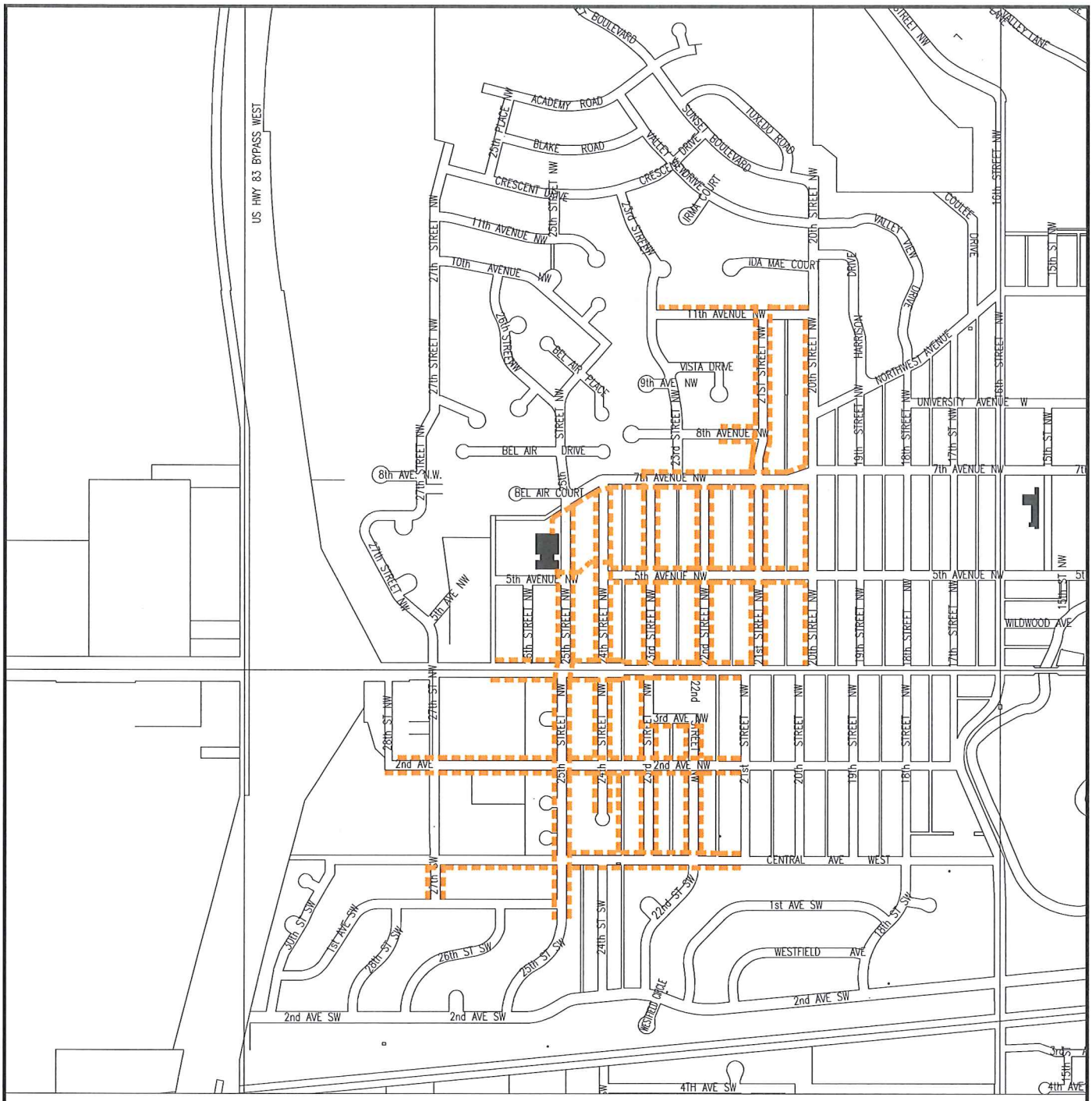
The study area was inventoried for safe routes elements; the two primary elements examined to determine existing Safe Routes to School were (1) availability and condition of sidewalks, and (2) street crossings.

The study area for each school was surveyed to verify the location of sidewalks and their condition. Generally speaking, most of the neighborhoods surrounding the schools have sidewalks in place. As might be expected, schools located where there is a substantial lack of sidewalks are in neighborhoods developed in the 1970's, a time when sidewalks were not required (most notably, Edison and Washington). The City of Minot has done a good job of ensuring that sidewalks are kept in good repair; therefore, where sidewalks are in place, they are generally in good condition.

In order to assess the relative safety of street crossings, a number of factors were considered. These included the traffic volumes and speeds, the presence of intersection traffic control, and the presence of signing and pavement marking. Generally, it was assumed that a child could cross a street relatively safely where:

- A marked and signed crosswalk was in place
- A traffic signal was in place
- A stop sign was in place to control conflicting traffic
- A crossing guard was in place
- The street to be crossed was classified as a local residential street with low traffic volumes and speeds

Using these criteria, existing safe routes for each of the schools were developed and safe routes maps were prepared. The existing safe routes to school network for each elementary school are shown in the following pages.



- EXISTING SAFE ROUTES TO SCHOOL NETWORK -

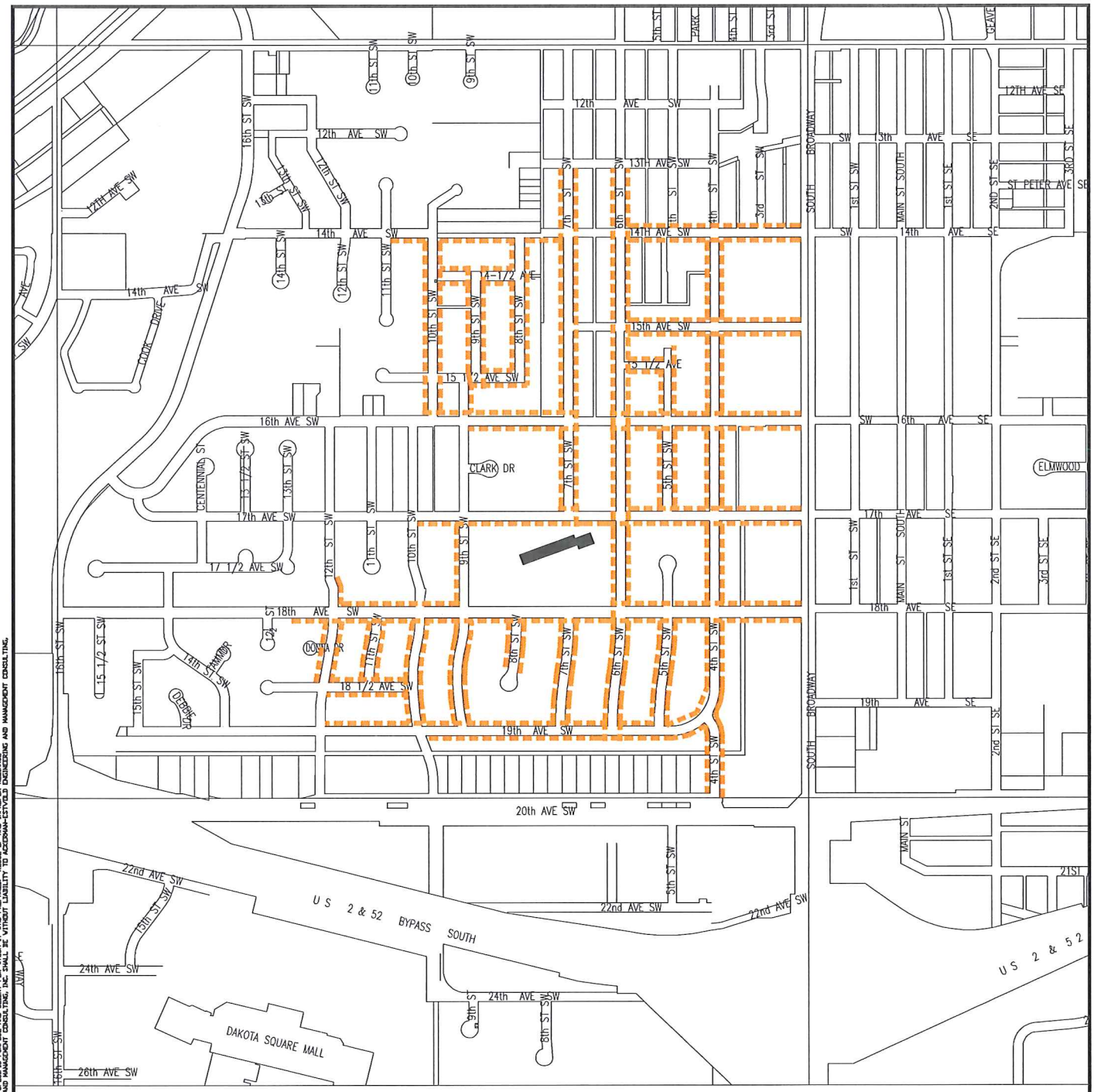
BEL AIR SCHOOL

LEGEND

= EXISTING SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 11



- EXISTING SAFE ROUTES TO SCHOOL NETWORK -

EDISON SCHOOL

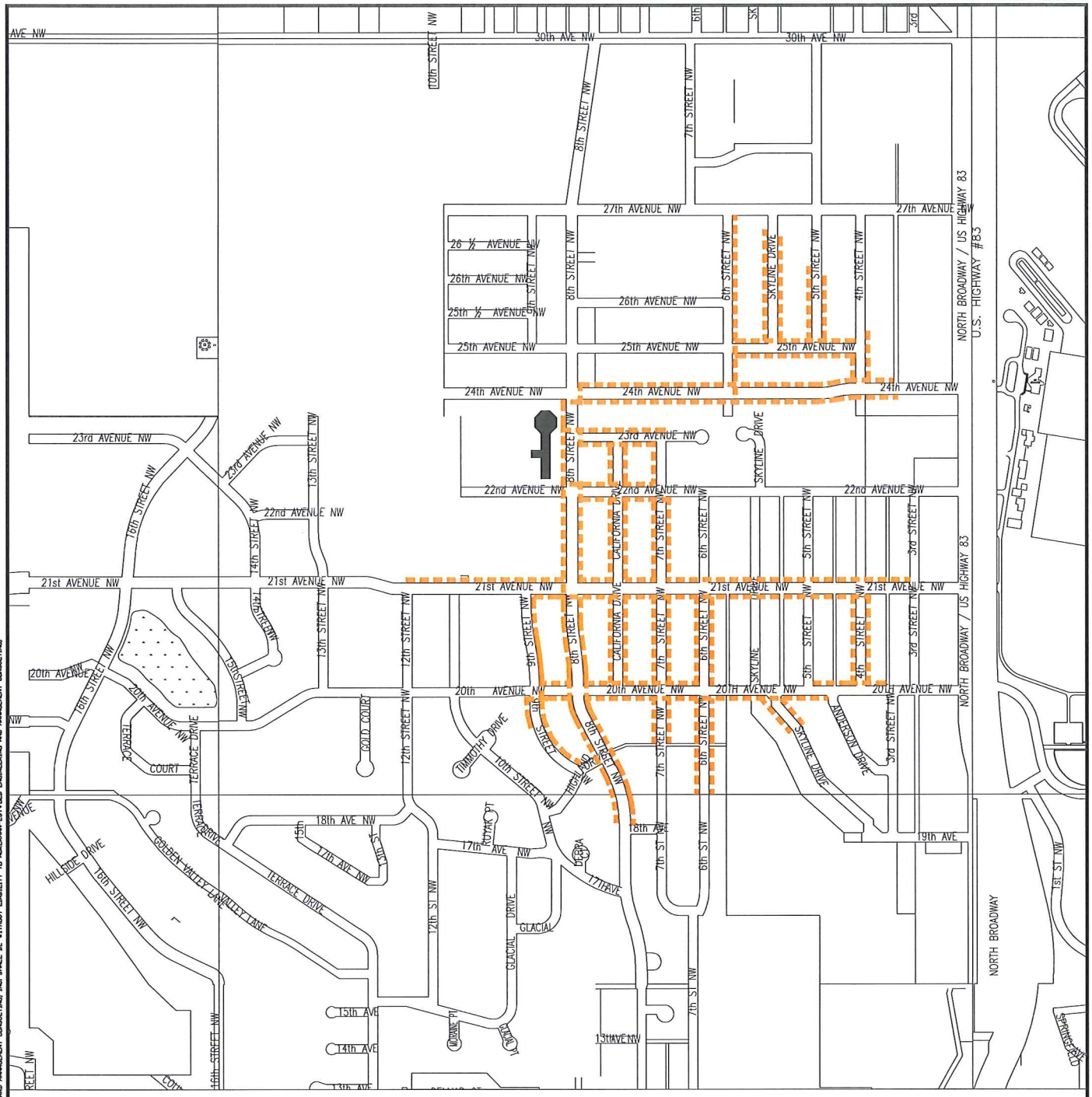
LEGEND

= EXISTING SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION

FIGURE 12



- EXISTING SAFE ROUTES TO SCHOOL NETWORK -

LEWIS & CLARK SCHOOL

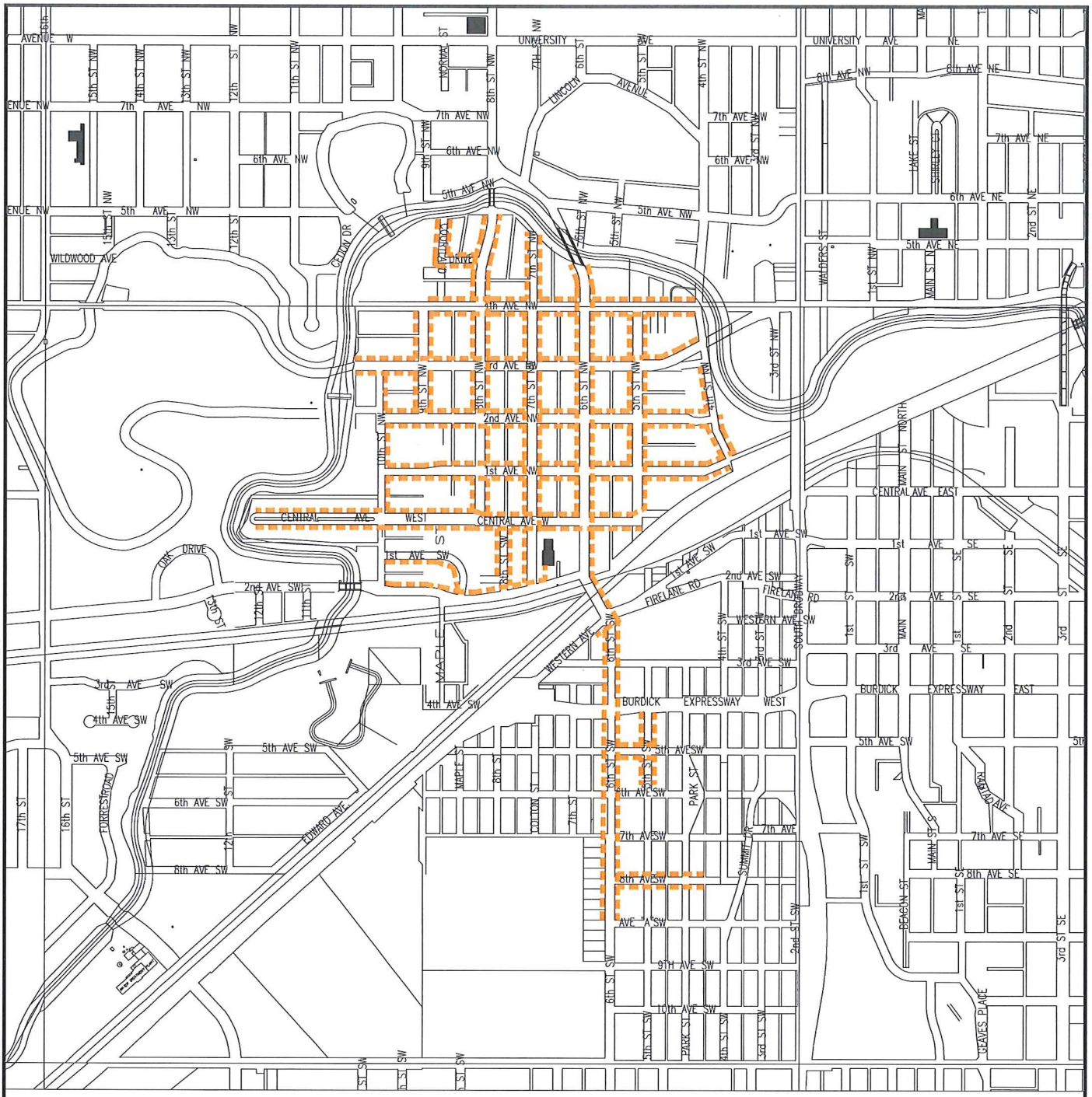
LEGEND

= EXISTING SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION

FIGURE 13



- EXISTING SAFE ROUTES TO SCHOOL NETWORK -

LINCOLN SCHOOL

LEGEND

= EXISTING SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION

FIGURE 14

- EXISTING SAFE ROUTES TO SCHOOL NETWORK -

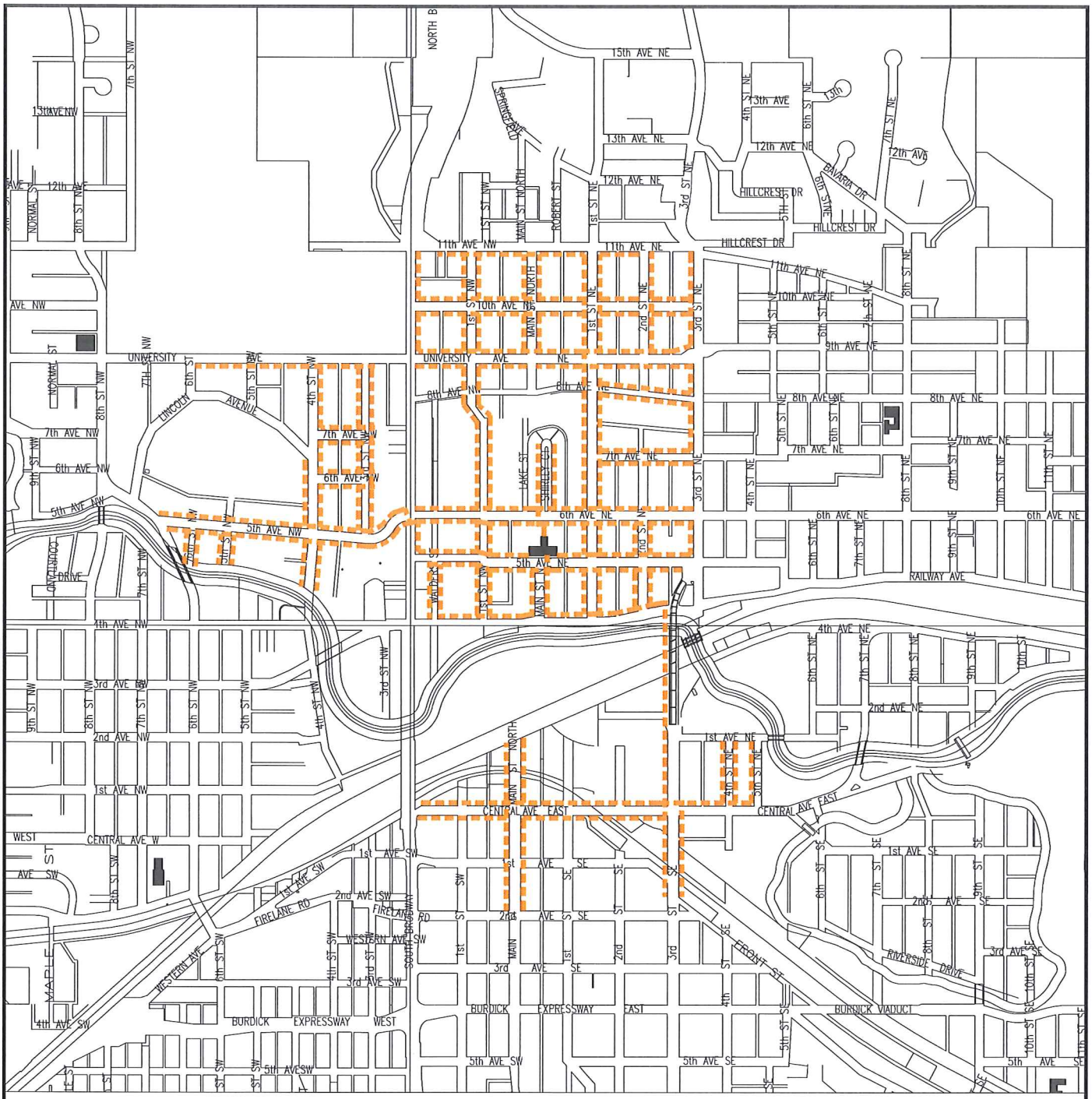
LONGFELLOW SCHOOL

LEGEND

= EXISTING SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 15



- EXISTING SAFE ROUTES TO SCHOOL NETWORK -

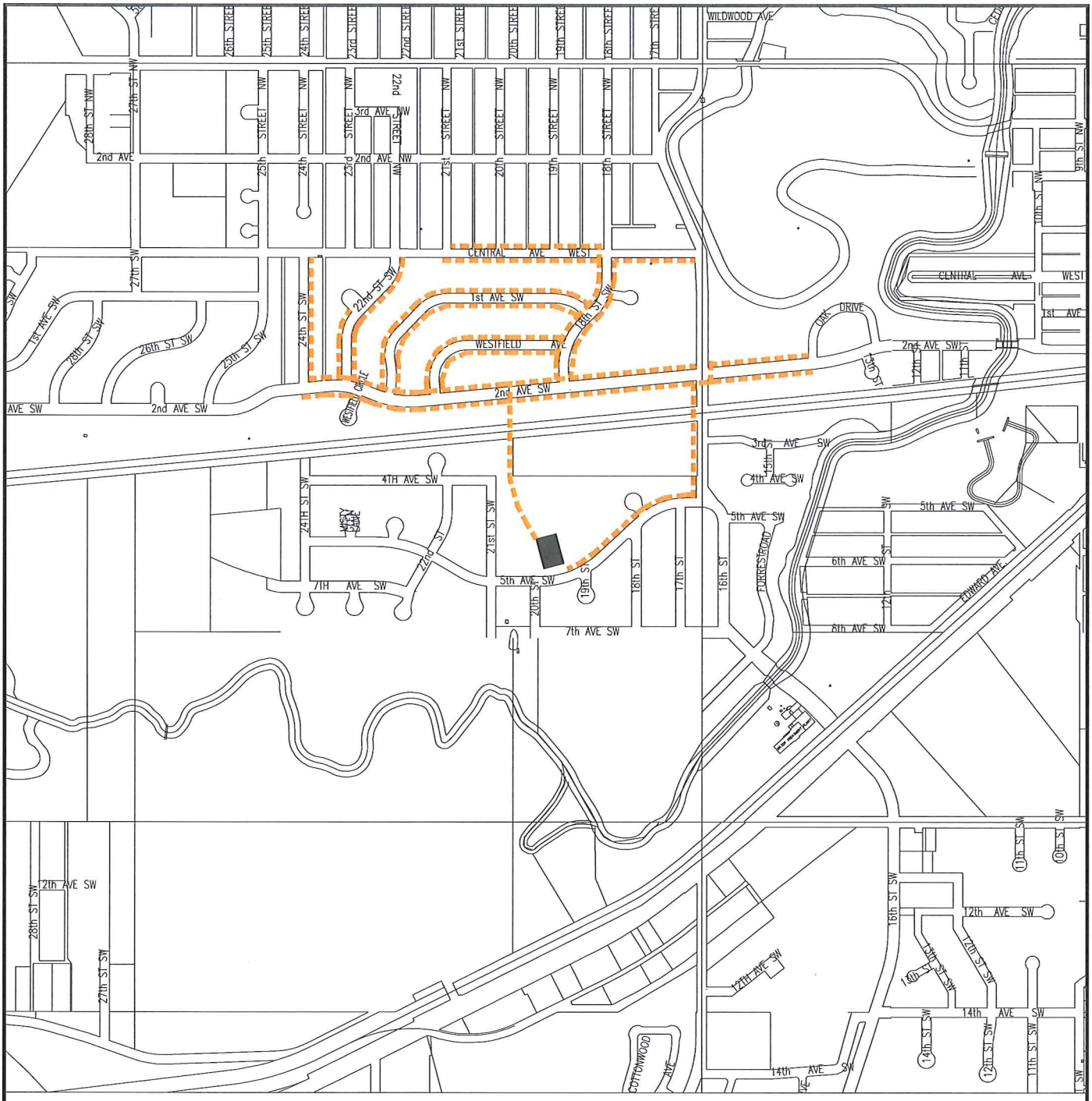
McKINLEY SCHOOL

LEGEND

= EXISTING SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION	FIGURE 16



- EXISTING SAFE ROUTES TO SCHOOL NETWORK -

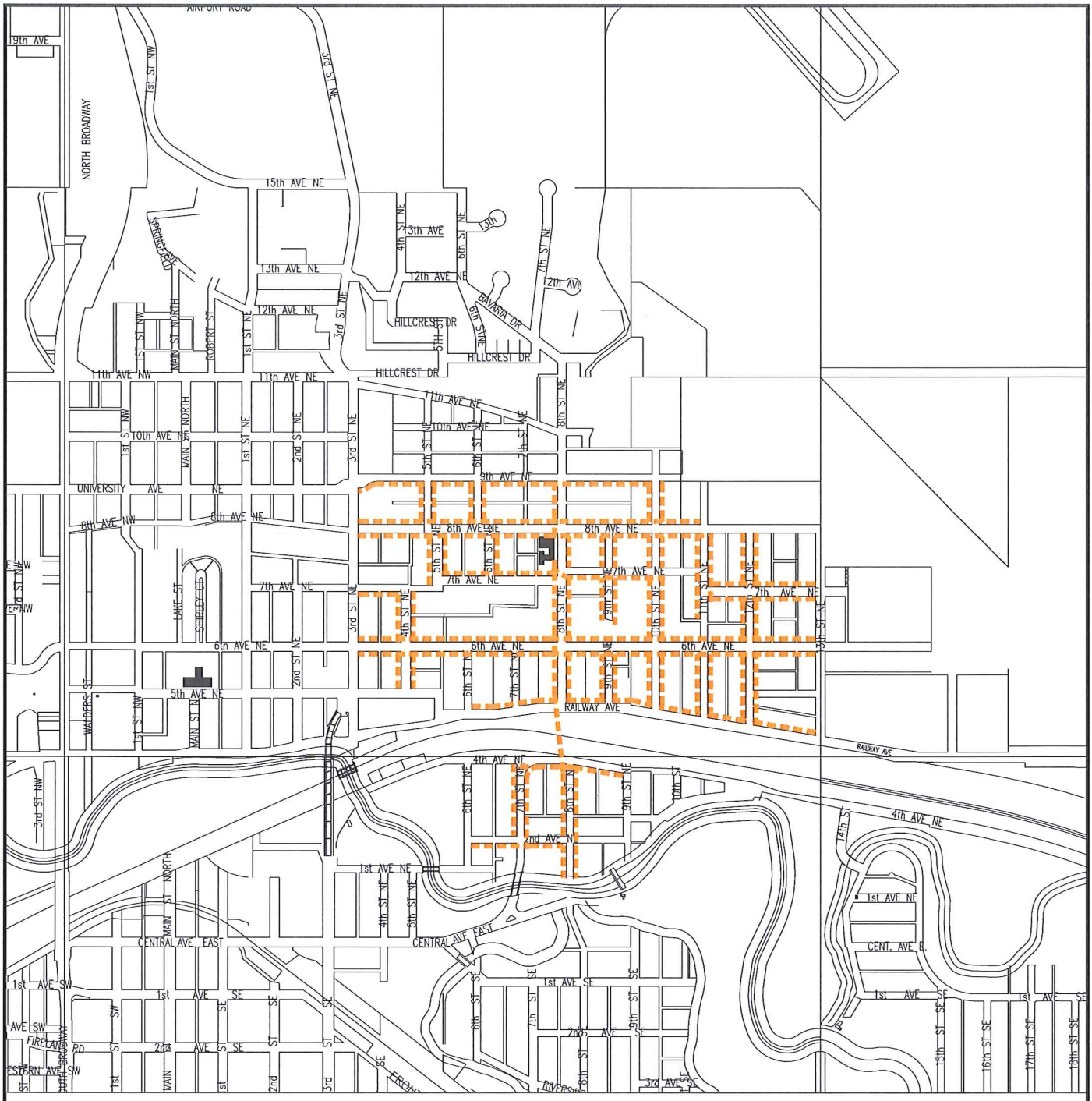
PERKETT SCHOOL

LEGEND

= EXISTING SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 17



- EXISTING SAFE ROUTES TO SCHOOL NETWORK -

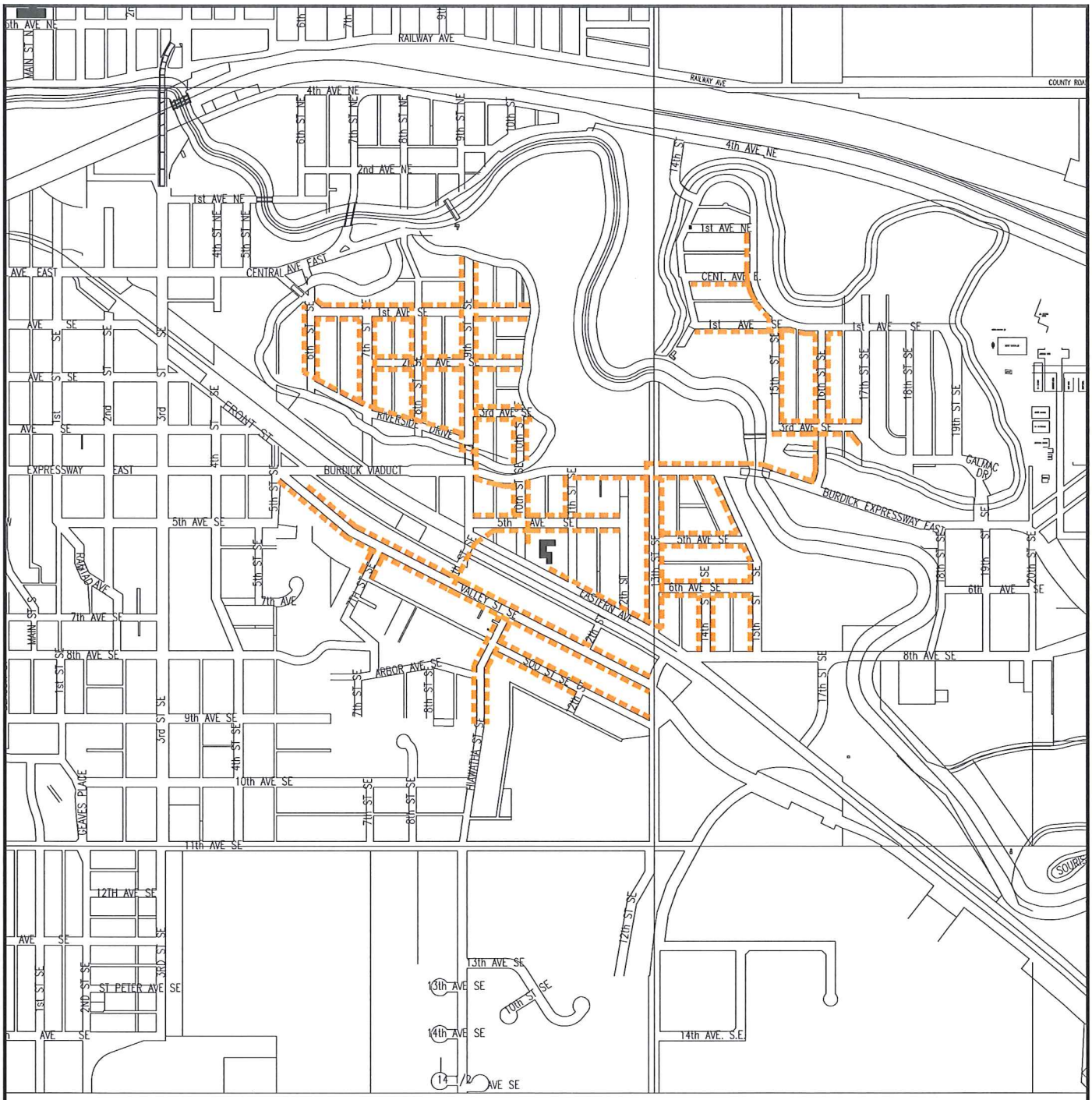
ROOSEVELT SCHOOL

LEGEND

= EXISTING SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 18



- EXISTING SAFE ROUTES TO SCHOOL NETWORK -

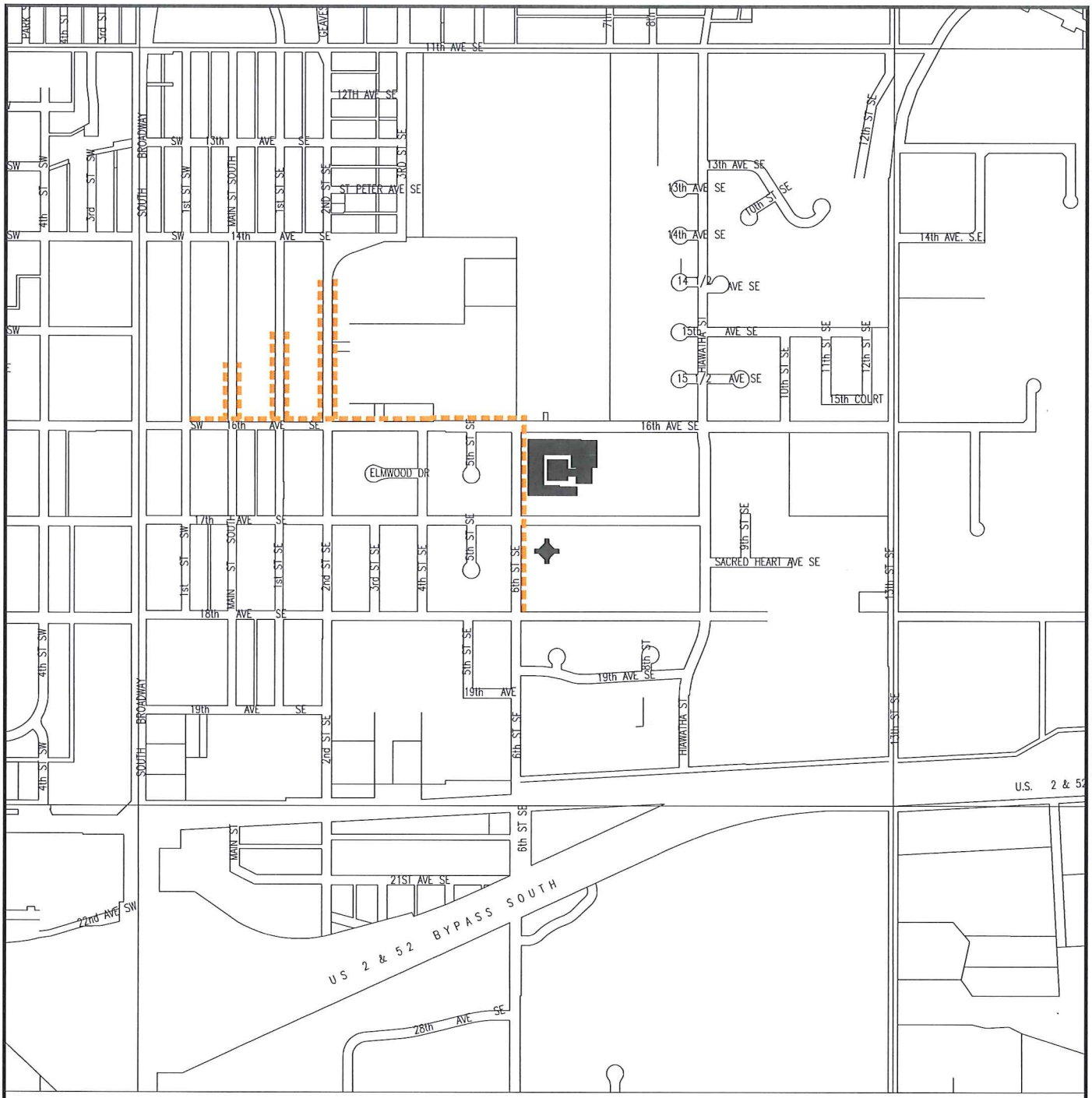
SUNNYSIDE SCHOOL

LEGEND

= EXISTING SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 19



- EXISTING SAFE ROUTES TO SCHOOL NETWORK -

WASHINGTON / ORCS SCHOOL

LEGEND

= EXISTING SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 20

The second safe route element this study focused on was the final leg of the school trip; this is defined as the travel route the student takes into the building once the school grounds are reached. In 1969, approximately half of all students walked or bicycled to school. Today, fewer than 15% of students walk or bike to school. Instead, they are transported to school primarily in private vehicle. This shift in transportation mode has created congestion and parking issues around the school. These issues can make this final leg of the trip to school the most daunting. A Safe Route to School is primarily defined by the infrastructure in place on the roadway network; however, the final segment from roadway into the school is an important part of the overall trip. Although the objective of this study is to identify infrastructure improvements, some recommendations will also be made for improvements on school grounds.

RECOMMENDED INFRASTRUCTURE IMPROVEMENTS

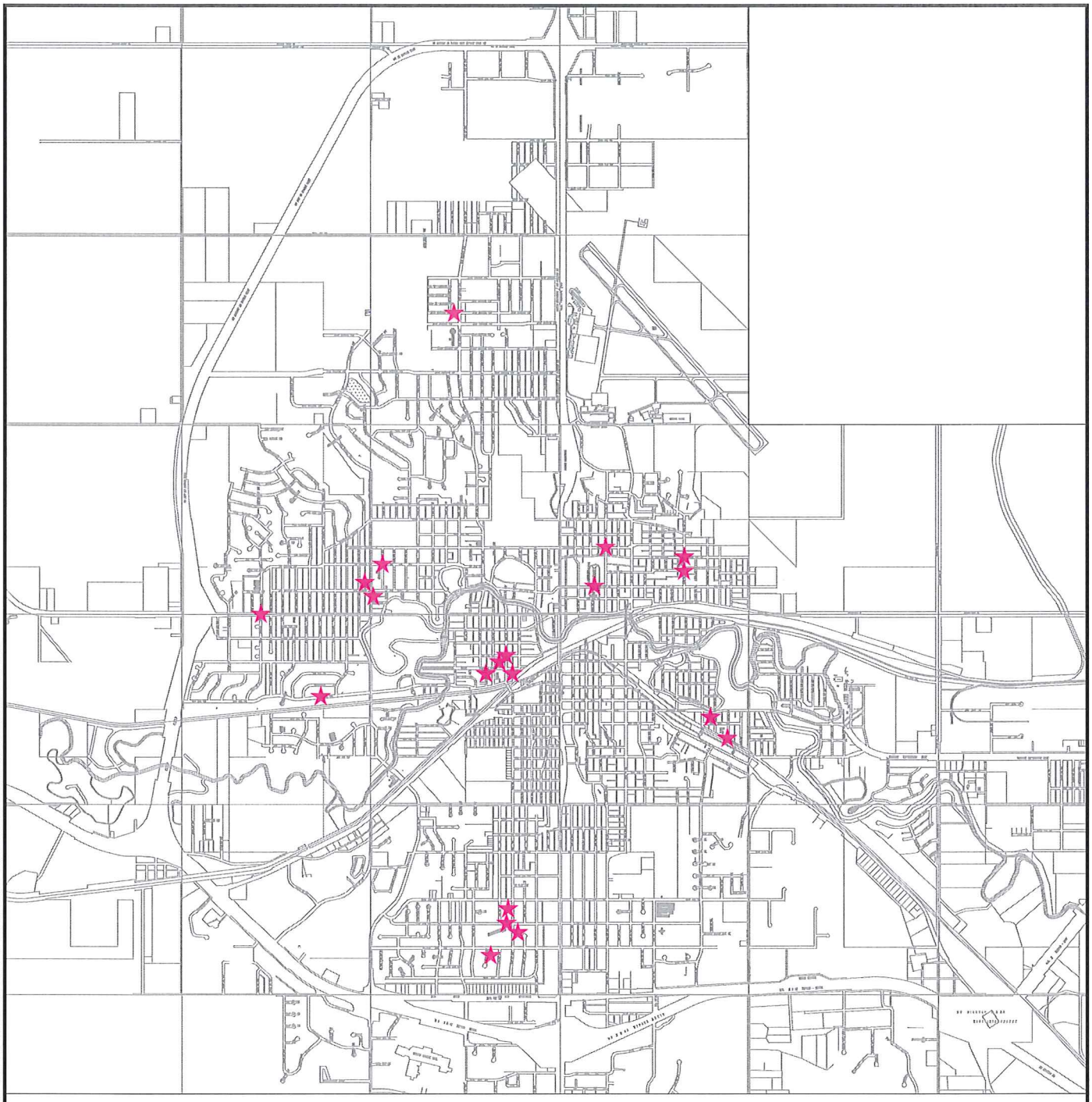
Infrastructure improvements needed to create new safe routes to school and to improve existing safe routes were identified using the criteria previously described in the Study Approach. A city-wide total of 46 recommended safe routes improvements were identified during this process; these recommended improvements ranged from minor signing revisions to fairly extensive sidewalk installation.

The City of Minot has provided crossing protection and other traffic control devices in key locations surrounding most of the schools to create fairly substantial safe routes networks. As noted earlier, the schools where safe routes networks are incomplete or inadequate are located in areas where residential development occurred when sidewalk installation was not required; therefore, the majority of recommended improvement costs are related to sidewalk construction. Many of the remaining recommended improvements are low cost, maintenance-type activities that can be completed using City forces or contracted for and financed utilizing budgeted maintenance funds.

Recommended Minor Improvements

Table 1 lists the recommended minor improvements in no particular order but grouped by school. The cost of each of these recommended improvements is less than $1,000, although most are less than $200. All of the improvements included in Table 1 can be accomplished without City Council approval or the need for outside funding sources. The following Figure 21 shows the location for these improvements.

TABLE 1: List of Recommended Minor Improvements	
School	**Improvement**
Bel-Air	Add diagonal arrow plaques to S1-1 signs EB & WB on 4th Avenue NW at 25th Street
Edison	Install School Advance Warning Assembly EB on 18th Avenue SW between 7th & 8th Streets SW
	Relocate WB School Advance Warning Assembly from east of 6th Street SW to west of 6th Street SW on 17th Avenue SW
	Add diagonal arrow plaques to Crosswalk Warning Assemblies NB & SB on 6th Street SW at 17th Avenue SW
Lewis & Clark	Add "Ahead" plaque to SB Advance Warning Assembly on 8th Street NW at 25th Avenue NW
Lincoln	Install School Advance Warning Assemblies on Central Avenue approaches to crosswalk at 7th Street
	Add diagonal arrow plaques to Crosswalk Warning Assemblies on Central Avenue at 7th Street
	Add diagonal arrow plaques to Crosswalk Warning Assemblies NB & SB on 6th Street at Central Avenue
Longfellow	Relocate Crosswalk Warning Assembly SB on 16th Street to crosswalk location at 5th Avenue NW
	Add "Ahead" plaques to School Advance Warning Assemblies and diagonal arrow plaques to Crosswalk Warning Assemblies on 16th Street NW, north and south of 5th Avenue NW
	Add "Ahead" plaques to School Advance Warning Assemblies and diagonal arrow plaques to Crosswalk Warning Assemblies on 7th Avenue NW, east and west of 15th Street NW
McKinley	Add diagonal arrow plaques to Crosswalk Warning Assemblies on 5th Avenue NE at Shirley Court
	Add "Ahead" plaques to School Advance Warning Assemblies on University Avenue at 1st Street NE
Perkett	Add diagonal arrow plaques to Crosswalk Warning Assemblies EB & WB on 2nd Avenue SW, 1900 block
Roosevelt	Relocate SB School Advance Warning Assembly on 8th Street NE from south of 9th Avenue NE to south of 8th Avenue NE
	Add "Ahead" plaques and diagonal arrow plaques to both School Advance Warning Assemblies and School Crosswalk Assemblies NB & SB on 8th Street at 7th Avenue NE
	Relocate both School Crosswalk Warning Assemblies on 8th Avenue N to crosswalk location just on west side of 8th Street NE
	Add "Ahead" plaques to School Advance Warning Assemblies WB & EB on 8th Avenue NE
Sunnyside	Update SB School Advance Warning and School Crosswalk Assemblies on 10th Street SE to new standard
	Install School Crosswalk Assembly SB on 11th Street SE at Eastern Avenue



- SAFE ROUTES TO SCHOOL -

RECOMMENDED MINOR IMPROVEMENTS

LEGEND

★ = IMPROVEMENT LOCATION

SCALE: 1"=4000'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=4000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION

FIGURE 21

Recommended Major Improvements

The remaining recommended improvements are classified in this report as major improvements because they may require City Council action, federal or state funding program participation, or more extensive warranting analysis. In addition, experience indicates that installation of sidewalks in residential areas currently without sidewalks is often met with objections from property owners; these types of improvements may also require public meetings, written correspondence, etc. to complete.

All of the projects classified as major improvements were ranked using a number of criteria. These criteria and associated ranking values are as follows:

a. Proximity to Residential Area: How well does the improvement serve the surrounding residential area? Highest ranking for improvement that has the greatest potential of increasing number of students walking or bicycling to school. Ranking: 5 (Highest) to 1 (lowest).
b. Distance from School: Higher ranking for improvements closer to school. Ranking 5 to 1.
c. Safety: Higher rankings for improvements that provide greatest safety benefits. Ranking: 5 to 1.
d. Access to Preferred School Entrance: Higher ranking for improvements that enhance routes leading to the school entrance deemed safest. Ranking: 5 to 0.
e. Engineering Judgment: Ranking based on judgment of the overall benefits of an improvement to achieve the Safe Routes to School Program objectives. Ranking: 24 to 1.

Table 2 lists all of the major improvements with ranking values for each of the criteria shown above.

Table 2: Recommended Improvement Ranking

School	Improvement	Priority Ranking Points					
		a	b	c	d	e	Total
Bel-Air	Install sidewalks on the west side of 25thStreet/10th Avenue NW from Bel-Air Court to 27th Street NW	5	4	3	0	7	19
	Install sidewalk on the west side of 26th Street NW from 25th Street NW to 10th Avenue NW	5	3	2	0	6	16
	Install sidewalk on the north side of 7th Avenue NW from 23rd Street NW to 25th Street NW	1	4	5	0	5	15
	Install sidewalk on the west side of 23rd Street NW from 7th Avenue NW to Crescent Drive	3	2	2	0	8	15
Edison	Add sidewalk on the south side of 16th Avenue SW from 16th Street SW to 9th Street SW, both sides of 17th Avenue SW from 16th Avenue SW to 7th Street SW and the north side of 18th Avenue SW from 16th Street SW to 9th Street SW	5	4	5	3	18	35
	Install sidewalk on either side of 10th, 11th & 12th Streets SW between 16th & 18th Avenues SW and on the west side of 9th Street SW between 16th & 17th Avenues SW	3	3	2	0	10	18
Lewis & Clark	Install sidewalk on both sides of 8th Street NW between 23rd Avenue NW and 26th Avenue NW (1 ½ block on each side)	5	5	5	5	24	44
	Install sidewalk on one side of 25th & 26th Avenues NW from 6th Street NW to 8th Street NW	4	4	3	5	15	31
	Install sidewalks on one side of 24th, 25th, 25 ½, 26th, 26 ½ Avenues and 9th Street NW, west of 8th Street NW	5	4	3	5	11	28

Longfellow	Install sidewalk on either side of Harrison Drive and Valley View Drive from Northwest Avenue to 20th Street NW	2	1	3	5	3	14
McKinley	Install school crossing on 11th Avenue NE at 1st Street NE	2	1	5	1	4	13
Perkett	Complete sidewalks on 5th Avenue SW west of school to 24th Street SW, 22nd Street SW, north & south of 5th Avenue and on 21st Street from 5th Avenue SW to 4th Avenue NW. Install school crossing on 5th Avenue SW at 20th Street SW	4	5	4	3	23	39
	Mark crosswalk on 16th Street Swat 5th Avenue SW; Install ramps & detectable warning panels on both sides of 16th Street crossing; Install School Advance Warning Assembly SB on 16th Street: Add "Ahead plaque and diagonal arrow plaques to existing S1-1 signs on 16th Street	3	4	5	5	19	36
	Install sidewalk approach slab from sidewalk to school crossing on north side of 2nd Avenue SW, 1900 block	5	4	1	5	14	29
Roosevelt	Install school crossing on 9th Avenue NE on the west side of 8th Street NE	5	5	5	5	2	22
	Install sidewalks on the west side of 8th Street NE, Bavaria Drive & 6th Street E, north of 11th Avenue NE	3	2	3	3	9	20
Washington/ ORCS	Install sidewalk on the west side of 6th Street SE from 16th Avenue SE to 19th Avenue SE	5	5	5	3	22	40
	Install school crossing on 6th Street SE at 18th Avenue SE	5	4	5	3	21	38
	Install sidewalks on both sides of 17th Avenue SE from 3rd Street SE to 6th Street SE	5	5	3	4	20	37
	Install school crossing on 16th Avenue at Hiawatha	5	4	5	4	16	34
	Complete sidewalks on both sides of Hiawatha from 13th Avenue SE to 16th Avenue SE	5	3	4	4	17	33
	Install sidewalks on both sides of 18th Avenue SE from 2nd Street SE to 6th Street SE	4	4	3	3	13	27
	Install sidewalk on north side of 19th Avenue SE from 6th Street SE to 8th Street SE	3	4	3	3	12	25
	Complete sidewalks on the north side of 17th Avenue South between 1st Street SW and 2nd Street SW and on 18th Avenue SE between 1st Street SE and 2nd Street SE. Install school crossing on 2nd Street SE at 18th Avenue SE	5	1	1	1	1	9

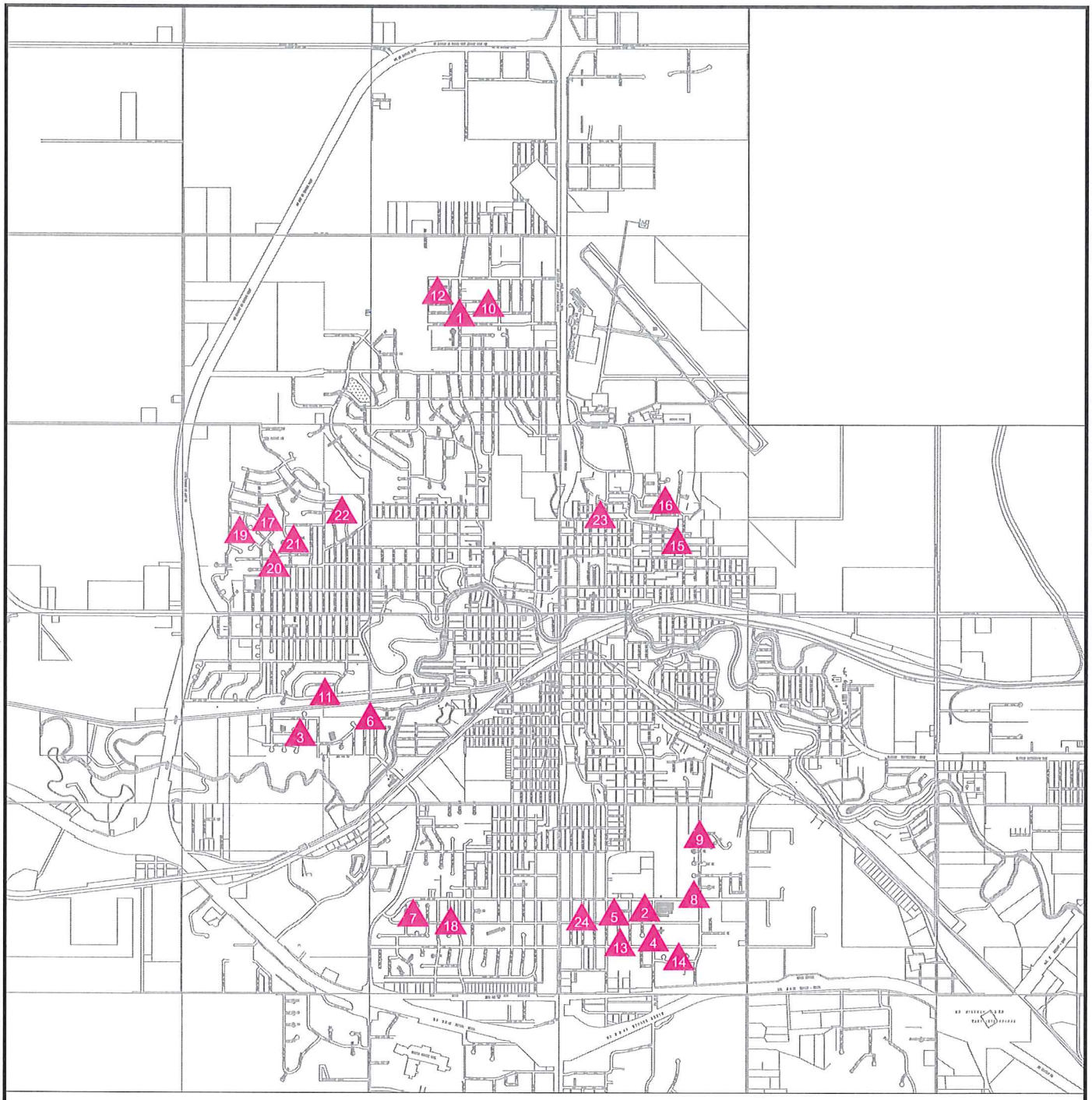
The final ranking totals were then used to develop the prioritized List of Recommended Major Improvements shown in Table 3.

TABLE 3: List of Recommended Major Improvements

Priority	School	Improvement	Cost
1	Lewis & Clark	Install sidewalk on both sides of 8th Street NW between 23rd Avenue NW and 26th Avenue NW (1 ½ block on each side)	$ 31,500
2	Washington/ORCS	Install sidewalk on the west side of 6th Street SE from 16th Avenue SE to 19th Avenue SE	$ 76,500
3	Perkett	Complete sidewalks on 5th Avenue SW west of school to 24th Street SW, 22nd Street SW, north & south of 5th Avenue and on 21st Street from 5th Avenue SW to 4th Avenue NW. Install school crossing on 5th Avenue SW at 20th Street SW	$ 104,700
4	Washington/ORCS	Install school crossing on 6th Street SE at 18th Avenue SE	$ 3,000

5	Washington/ORCS	Install sidewalks on both sides of 17th Avenue SE from 3rd Street SE to 6th Street SE	$ 63,000
6	Perkett	Mark crosswalk on 16th Street SW at 5th Avenue SW. Install ramps & detectable warning panels on both sides of 16th Street crossing. Install School Advance Warning Assembly SB on 16th Street. Add "Ahead" plaque and diagonal arrow plaques to existing S1-1 signs on 16th Street	$ 6,350
7	Edison	Add sidewalk on the south side of 16th Avenue SW from 16th Street SW to 9th Street SW, both sides of 17th Avenue SW from 16th Avenue SW to 7th Street SW and the north side of 18th Avenue SW from 16th Street SW to 9th Street SW	$ 300,000
8	Washington/ORCS	Install school crossing on 16th Avenue at Hiawatha	$ 3,000
9	Washington/ORCS	Complete sidewalks on both sides of Hiawatha from 13th Avenue SE to 16th Avenue SE	$ 128,250
10	Lewis & Clark	Install sidewalk on one side of 25th & 26th Avenues NW from 6th Street NW to 8th Street NW	$ 85,500
11	Perkett	Install sidewalk approach slab from sidewalk to school crossing on north side of 2nd Avenue SW, 1900 block	$ 1,500
12	Lewis & Clark	Install sidewalks on one side of 24th, 25th, 25 ½, 26th, 26 ½ Avenues and 9th Street NW, west of 8th Street NW	$ 72,000
13	Washington/ORCS	Install sidewalks on both sides of 18th Avenue SE from 2nd Street SE to 6th Street SE	$ 108,000
14	Washington/ORCS	Install sidewalk on north side of 19th Avenue SE from 6th Street SE to 8th Street SE	$ 33,750
15	Roosevelt	Install school crossing on 9th Avenue NE on the west side of 8th Street NE	$ 3,000
16	Roosevelt	Install sidewalks on the west side of 8th Street NE, Bavaria Drive & 6th Street E, north of 11th Avenue NE	$ 67,500
17	Bel-Air	Install sidewalks on the west side of 25th Street/10th Avenue NW from Bel-Air Court to 27th Street NW	$ 101,250
18	Edison	Install sidewalk on either side of 10th, 11th & 12th Streets SW between 16th & 18th Avenues SW and on the west side of 9th Street SW between 16th & 17th Avenues SW	$ 145,000
19	Bel-Air	Install sidewalk on the west side of 26th Street NW from 25th Street NW to 10th Avenue NW	$ 49,500
20	Bel-Air	Install sidewalk on the north side of 7th Avenue NW from 23rd Street NW to 25th Street NW	$ 22,500
21	Bel-Air	Install sidewalk on the west side of 23rd Street NW from 7th Avenue NW to Crescent Drive	$ 72,000
22	Longfellow	Install sidewalk on either side of Harrison Drive and Valley View Drive from Northwest Avenue to 20th Street NW	$ 108,000
23	McKinley	Install school crossing on 11th Avenue NE at 1st Street NE	$ 3,000
24	Washington/ORCS	Complete sidewalks on the north side of 17th Avenue South between 1st Street SW and 2nd Street SW and on 18th Avenue SE between 1st Street SE and 2nd Street SE. Install school crossing on 2nd Street SE at 18th Avenue SE	$ 25,500
Total Funding Required			**$ 1,614,300**

The locations of these recommended major improvements are shown in Figure 22. Detailed location maps for each prioritized improvement also follow.



- SAFE ROUTES TO SCHOOL -

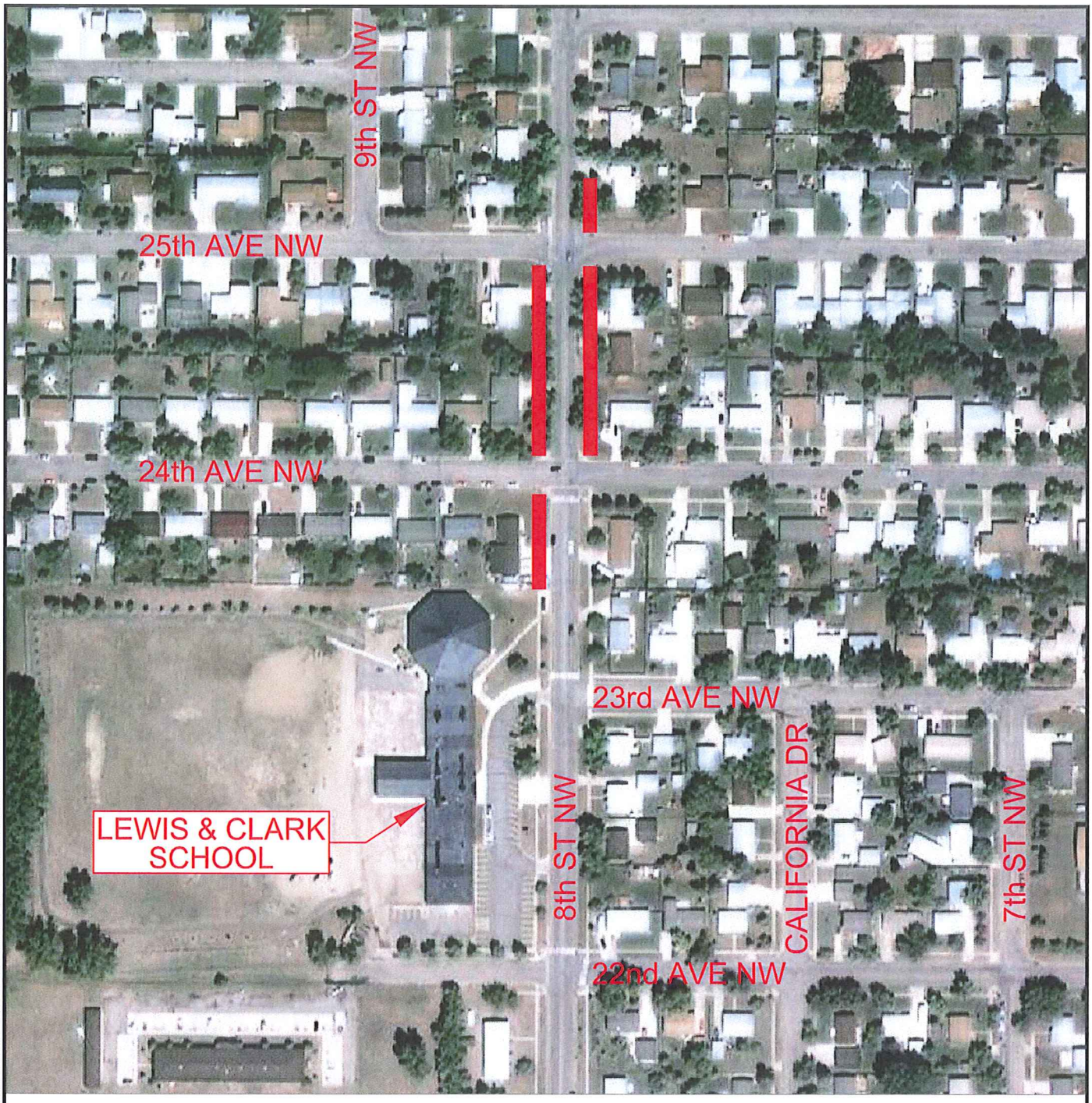
RECOMMENDED MAJOR IMPROVEMENTS

LEGEND

(#) = PRIORITY IMPROVEMENT LOCATION

SCALE: 1"=4000'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=4000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. © 2009, ACKERMAN-ESTVOLD ENGINEERING AND MANAGEMENT CONSULTING, INC. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION	FIGURE 22

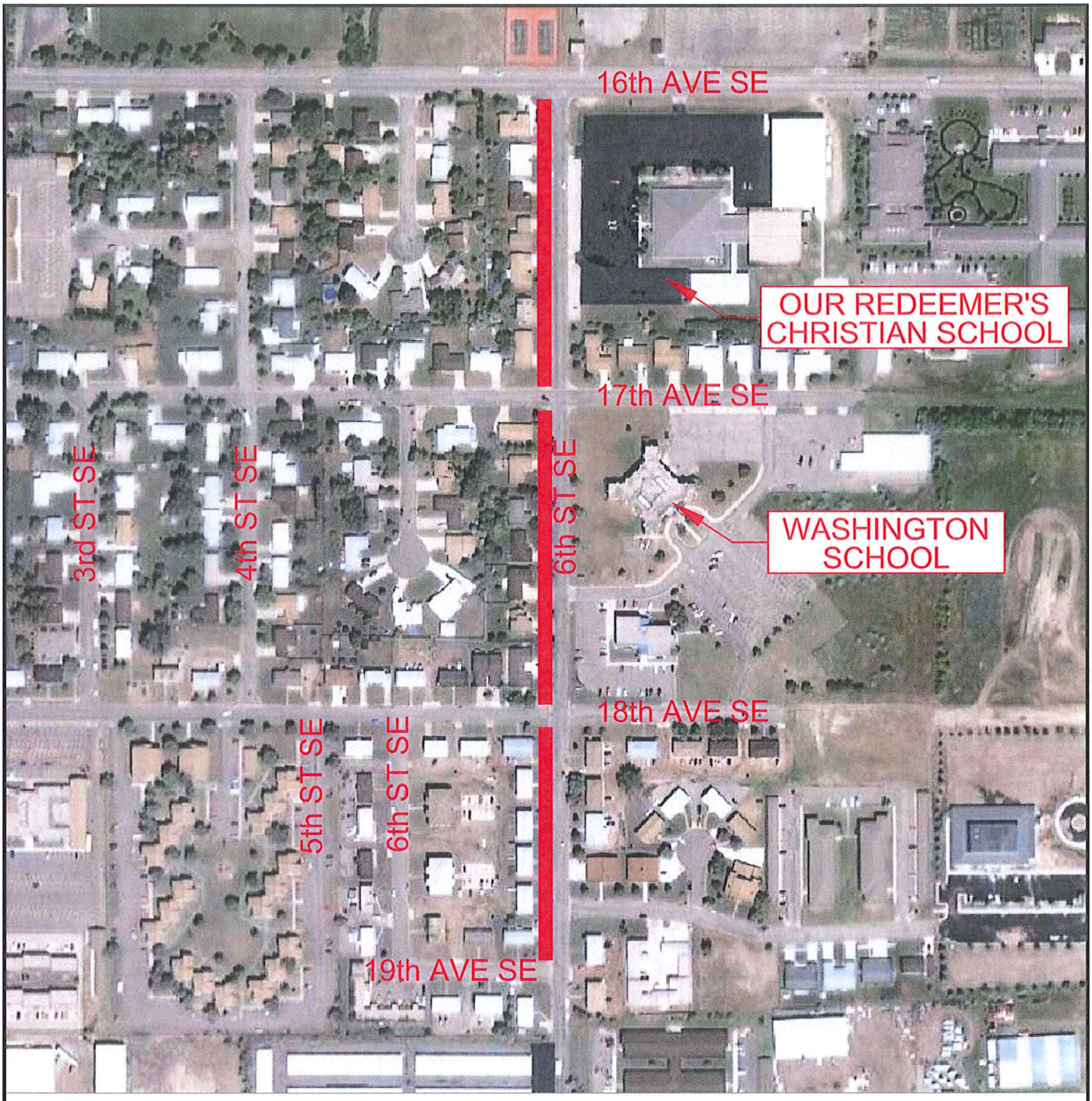


- SAFE ROUTES TO SCHOOL -

PRIORITY #1
LEWIS & CLARK

SCALE: 1"=200'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=200' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 23

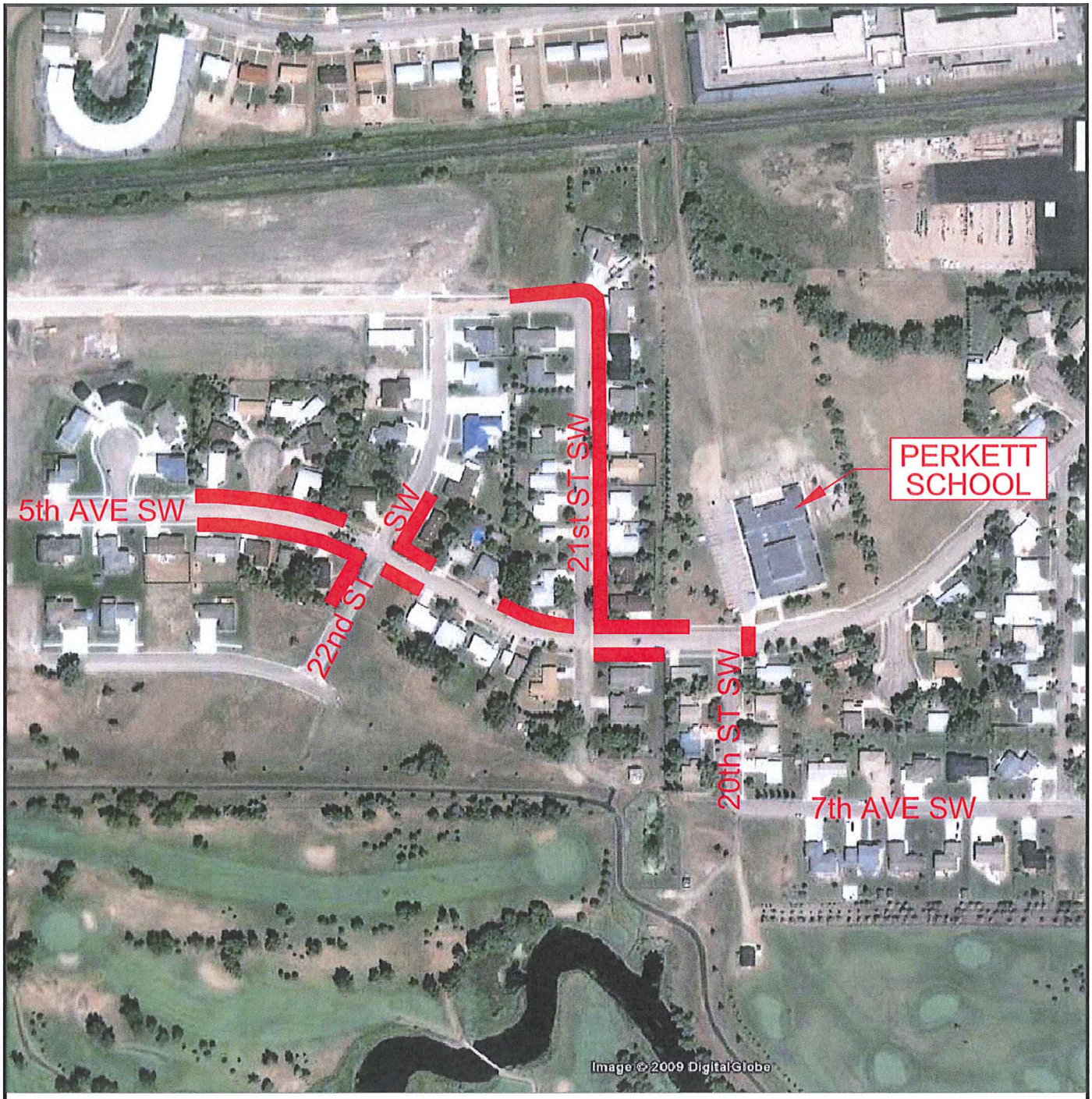


- SAFE ROUTES TO SCHOOL -

PRIORITY #2
WASHINGTON / ORCS

SCALE: 1"=300'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=300' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 24

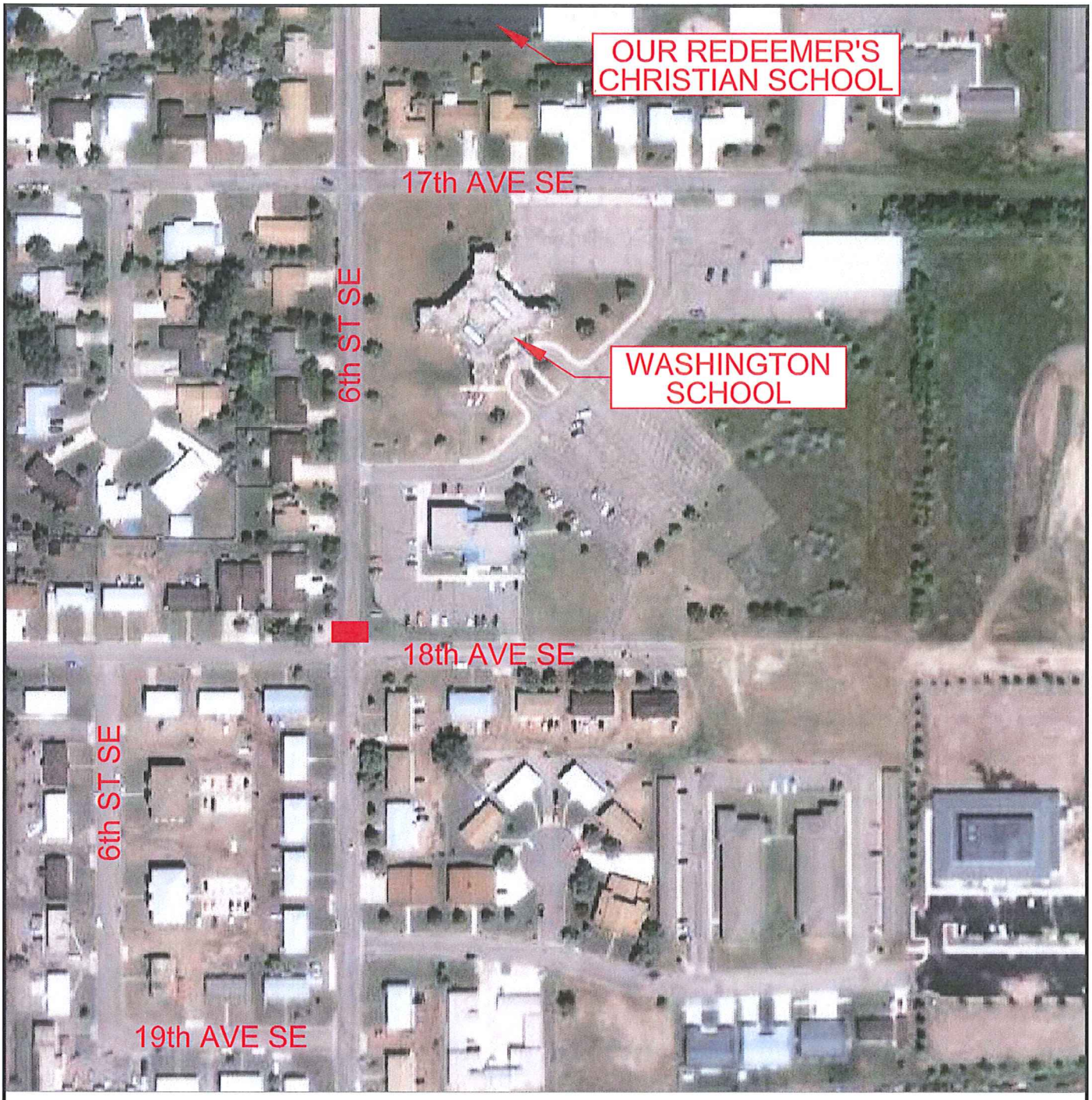


- SAFE ROUTES TO SCHOOL -

PRIORITY #3
PERKETT

SCALE: 1"=300'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=300' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 25

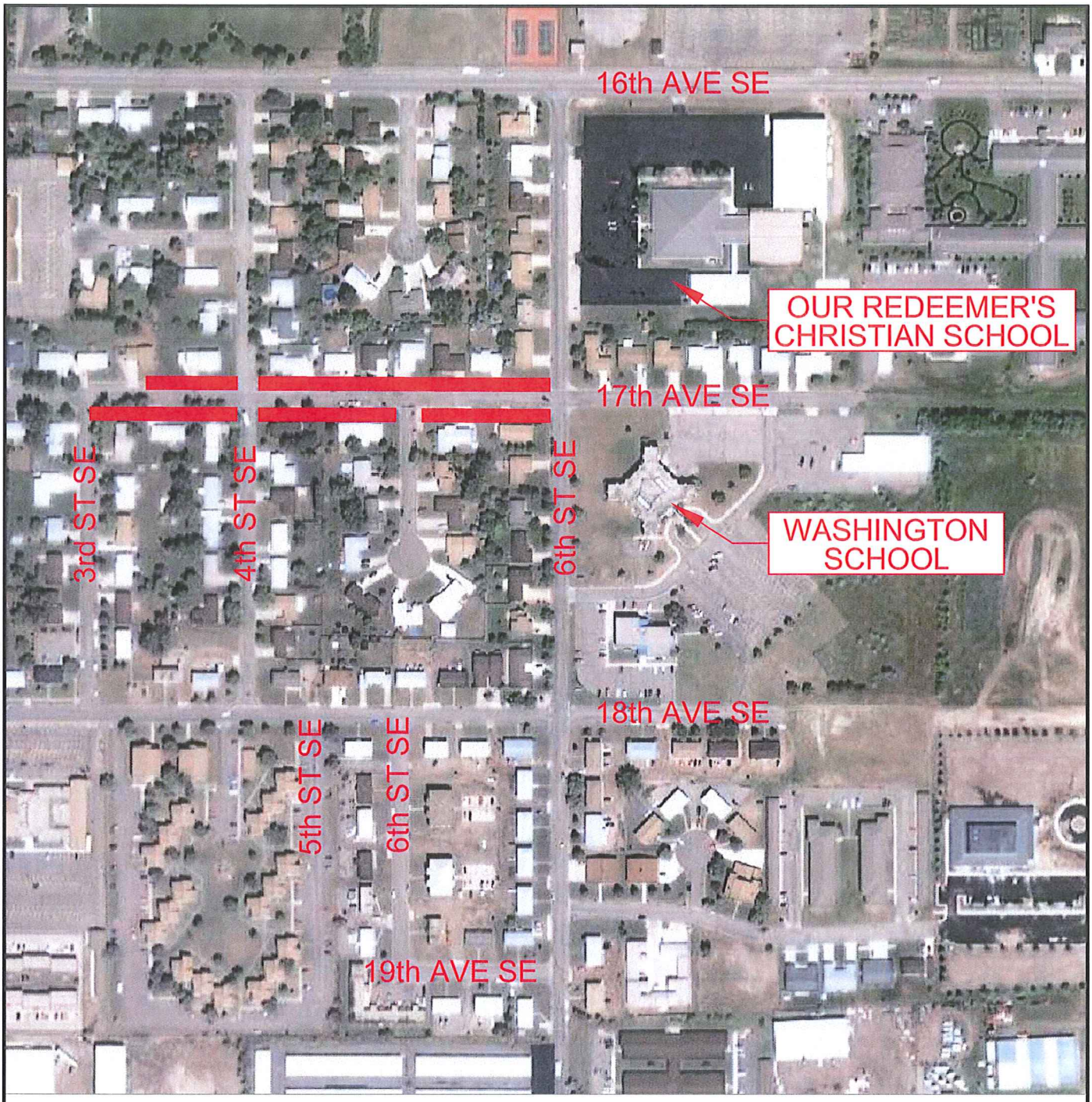


- SAFE ROUTES TO SCHOOL -

PRIORITY #4
WASHINGTON / ORCS

SCALE: 1"=200'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=200' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 26



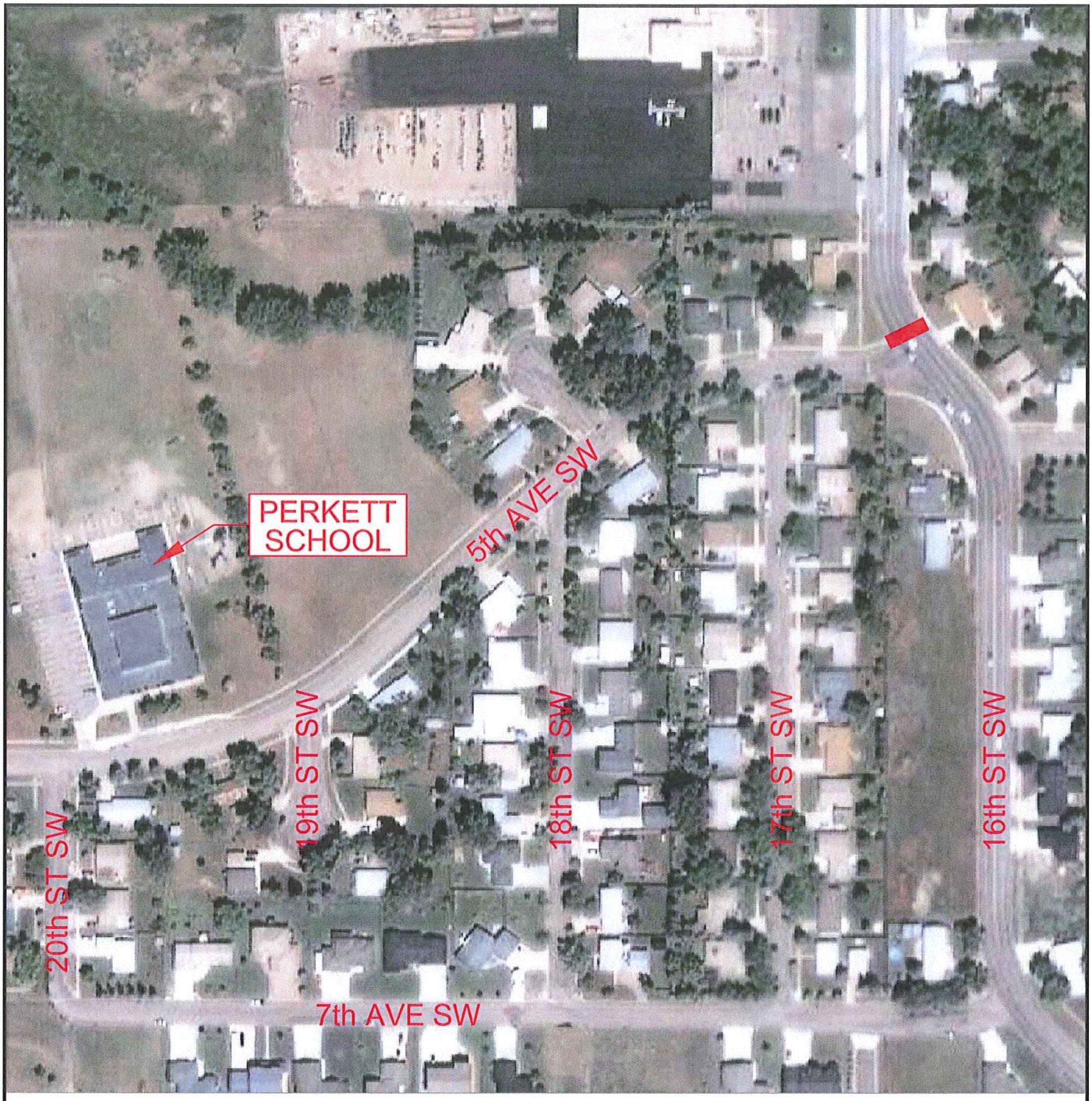
- SAFE ROUTES TO SCHOOL -

PRIORITY #5

WASHINGTON / ORCS

SCALE: 1"=300'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=300' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 27

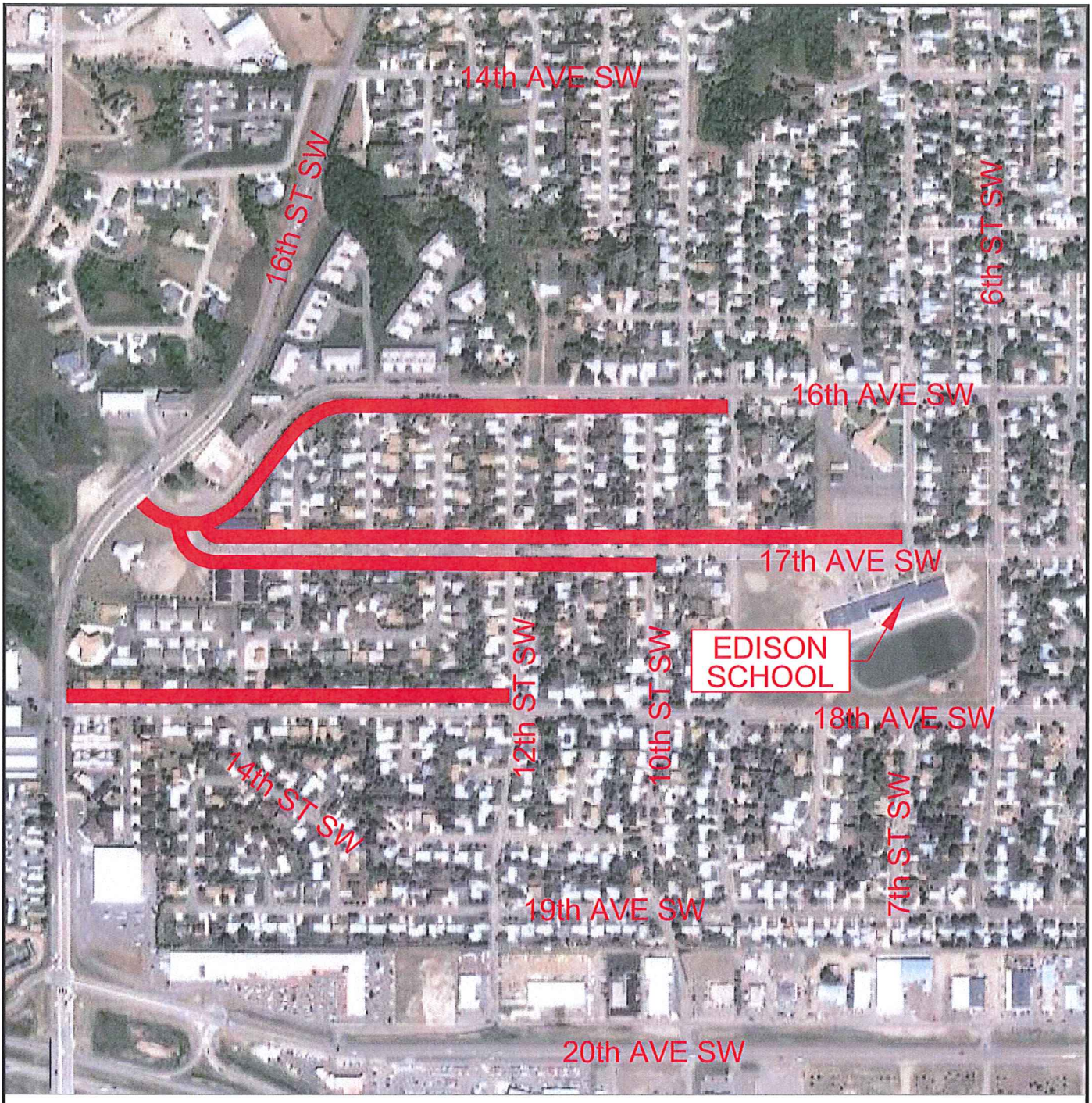


- SAFE ROUTES TO SCHOOL -

PRIORITY #6
PERKETT

SCALE: 1"=200'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=200' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 28



- SAFE ROUTES TO SCHOOL -

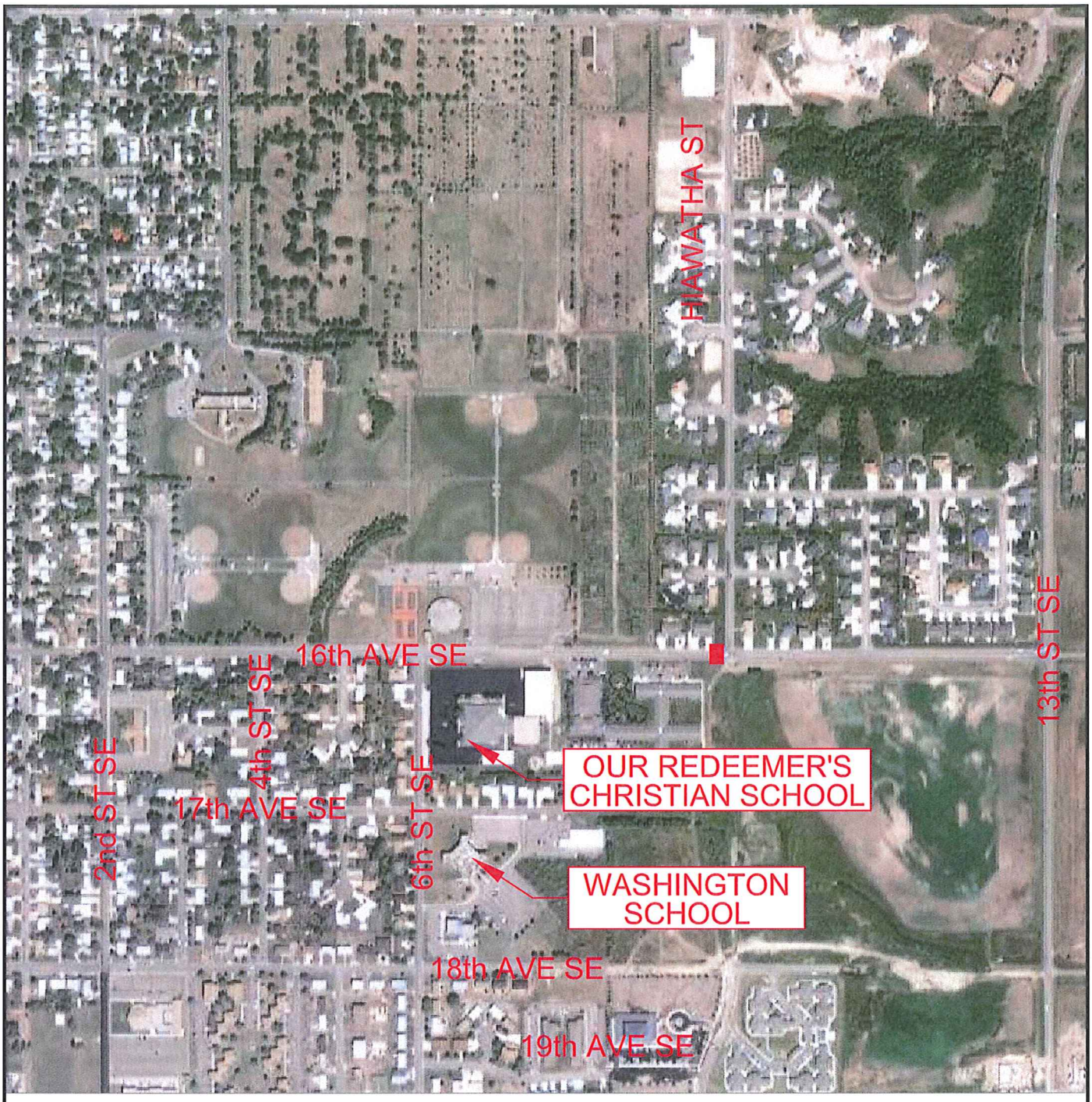
PRIORITY #7

EDISON

SCALE: 1"=600'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=600' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 29

6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737
CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION



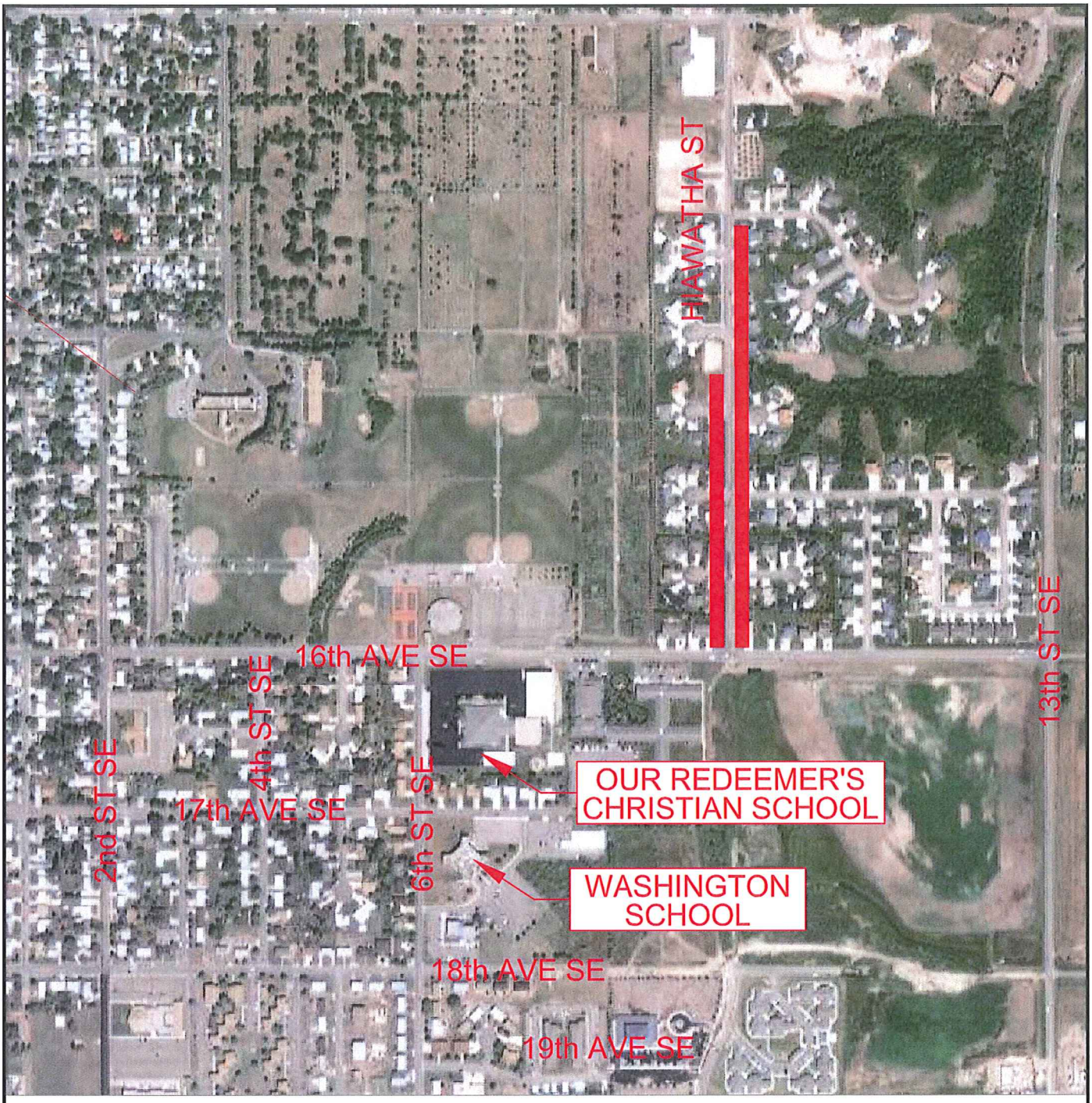
- SAFE ROUTES TO SCHOOL -

PRIORITY #8
WASHINGTON / ORCS

SCALE: 1"=600'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=600' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 30

6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737
CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION



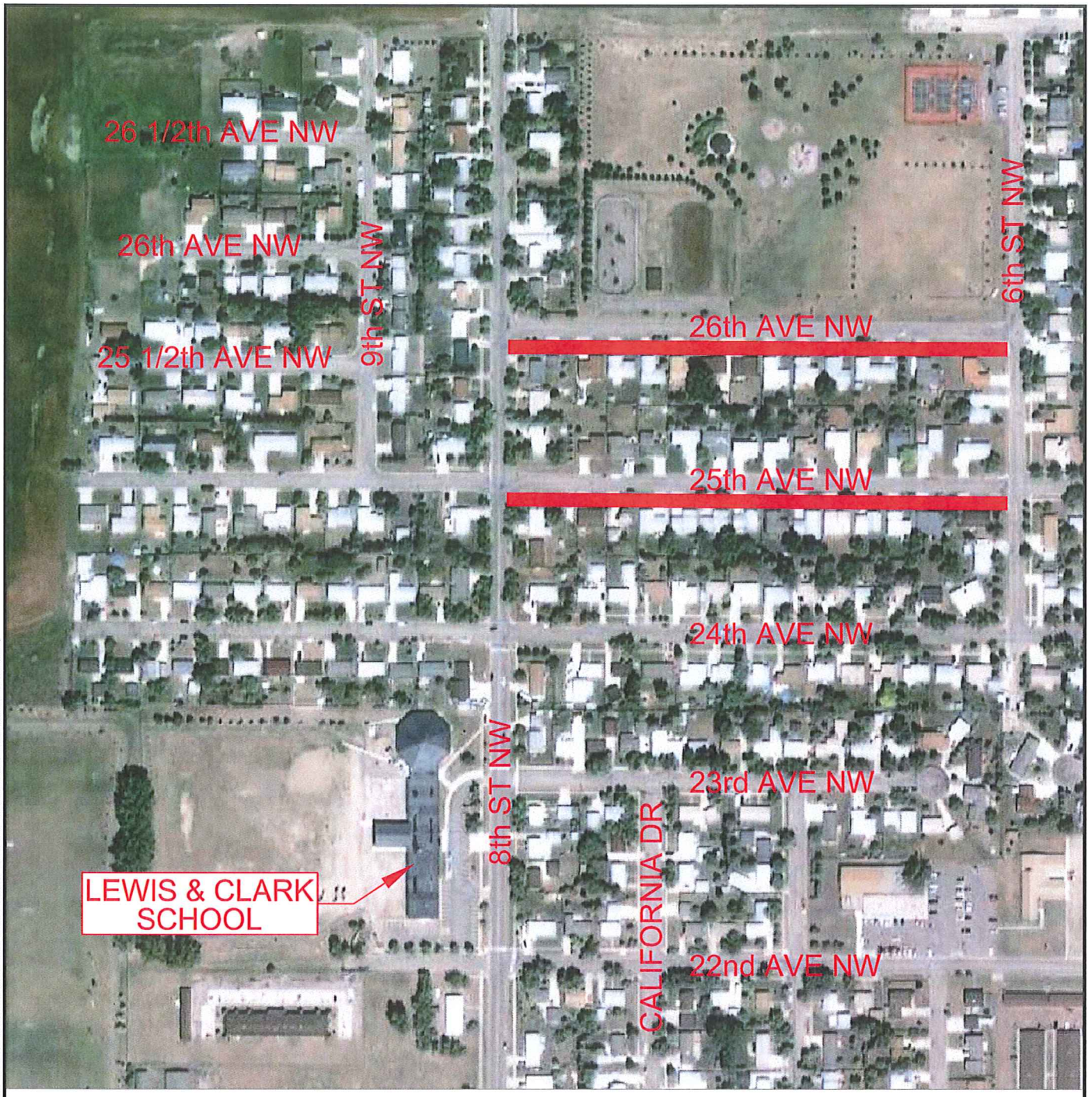
- SAFE ROUTES TO SCHOOL -

PRIORITY #9
WASHINGTON / ORCS

SCALE: 1"=600'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=600' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 31

6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737
CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION



- SAFE ROUTES TO SCHOOL -

PRIORITY #10
LEWIS & CLARK

SCALE: 1"=300'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=400' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 32

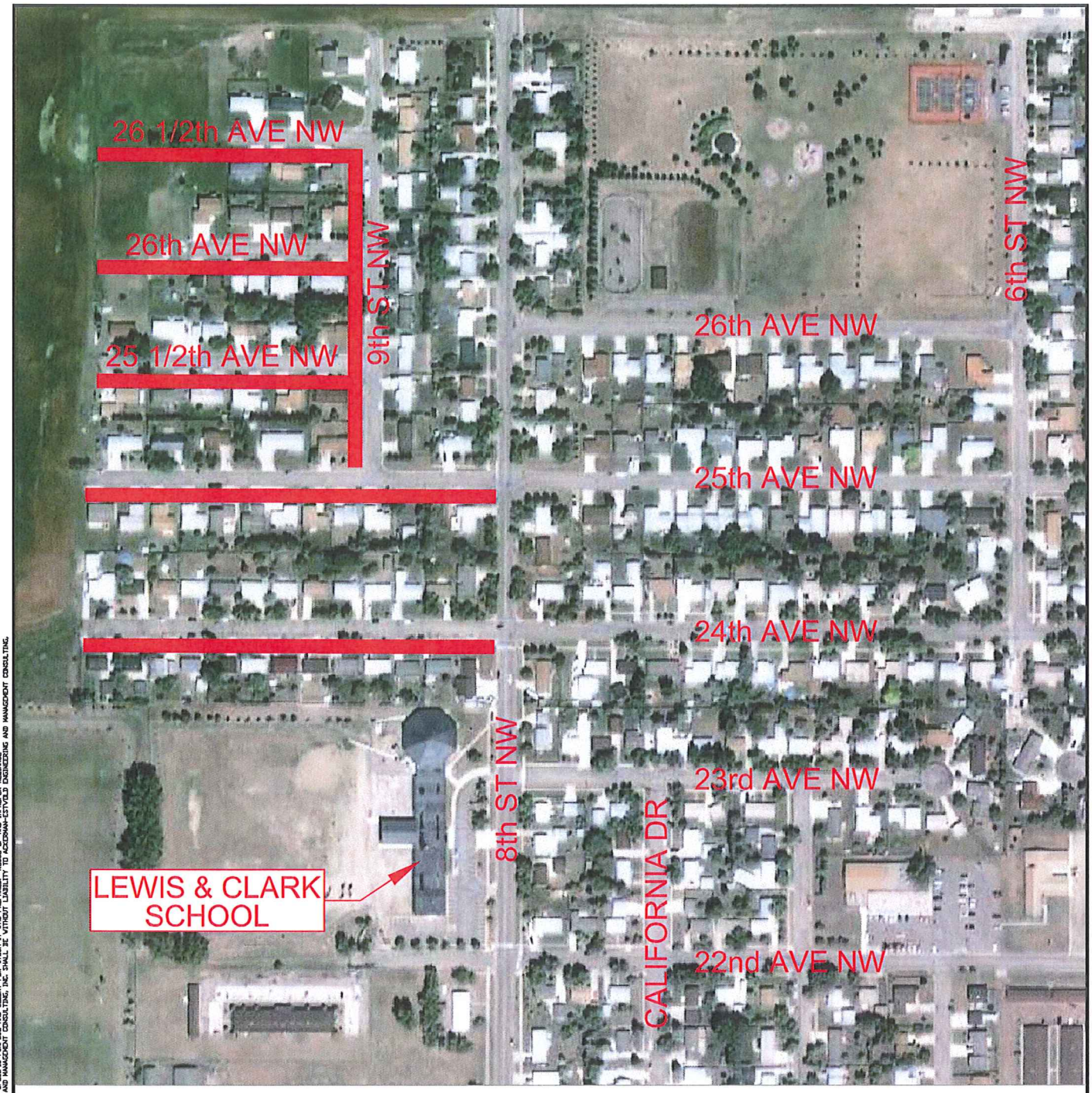
- SAFE ROUTES TO SCHOOL -

PRIORITY #11

PERKETT

SCALE: 1"=300'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=300' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 33

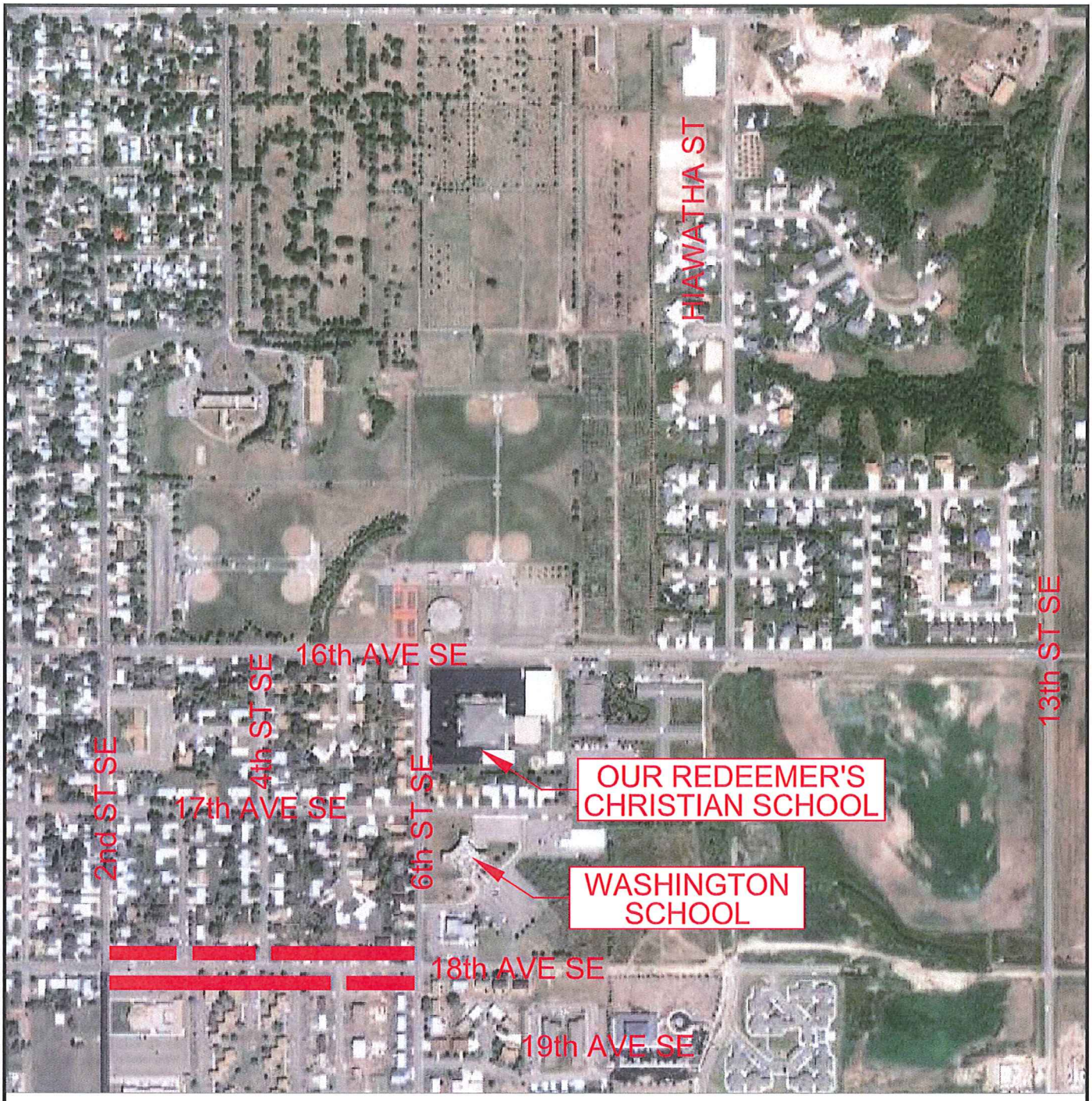


- SAFE ROUTES TO SCHOOL -

PRIORITY #12
LEWIS & CLARK

SCALE: 1"=300'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=400' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 34

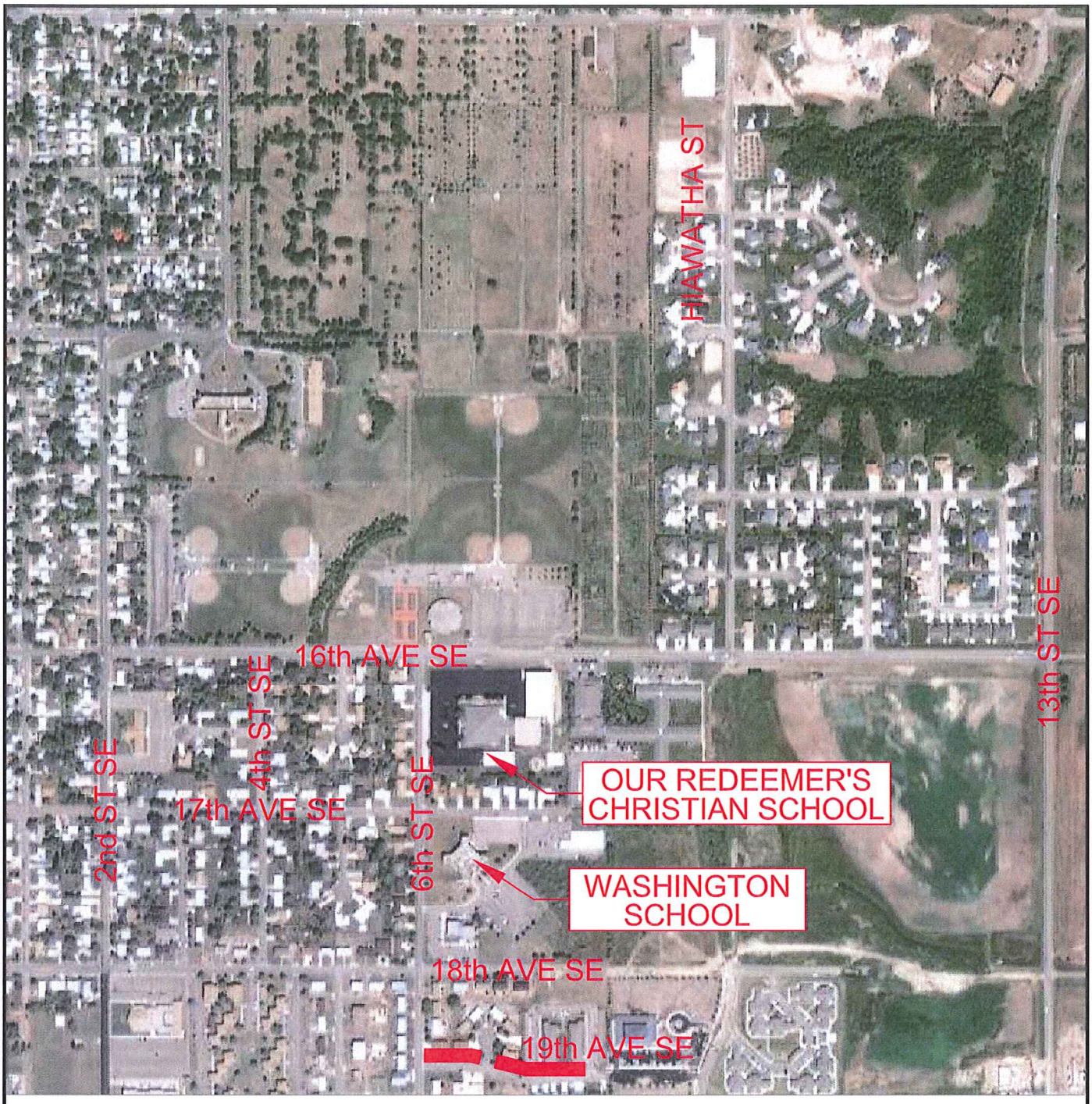


- SAFE ROUTES TO SCHOOL -

PRIORITY #13
WASHINGTON / ORCS

SCALE: 1"=600'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=600' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 35

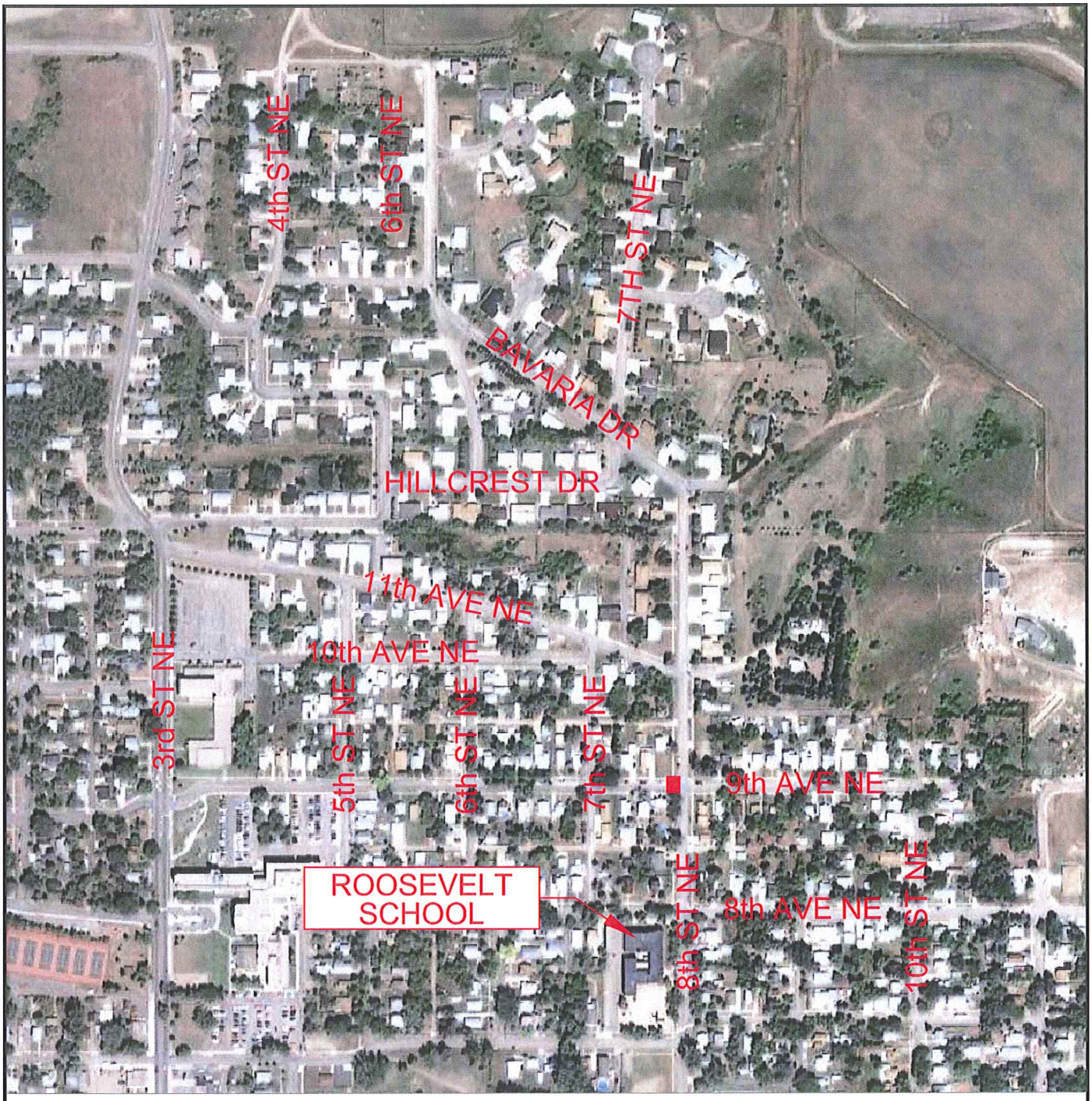


- SAFE ROUTES TO SCHOOL -

PRIORITY #14
WASHINGTON / ORCS

SCALE: 1"=600'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=600' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 36

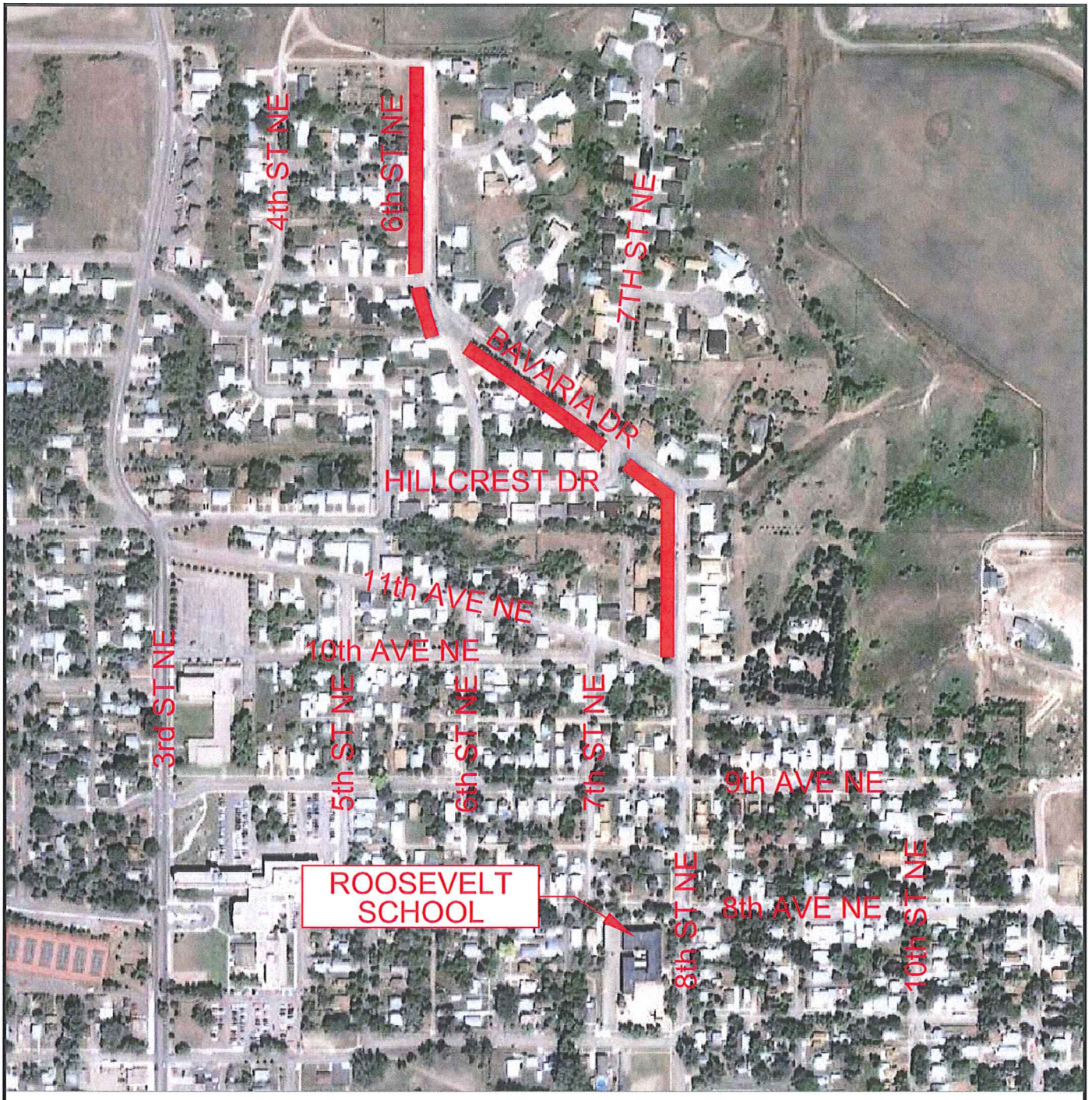


- SAFE ROUTES TO SCHOOL -

PRIORITY #15
ROOSEVELT

SCALE: 1"=400'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=400' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 37

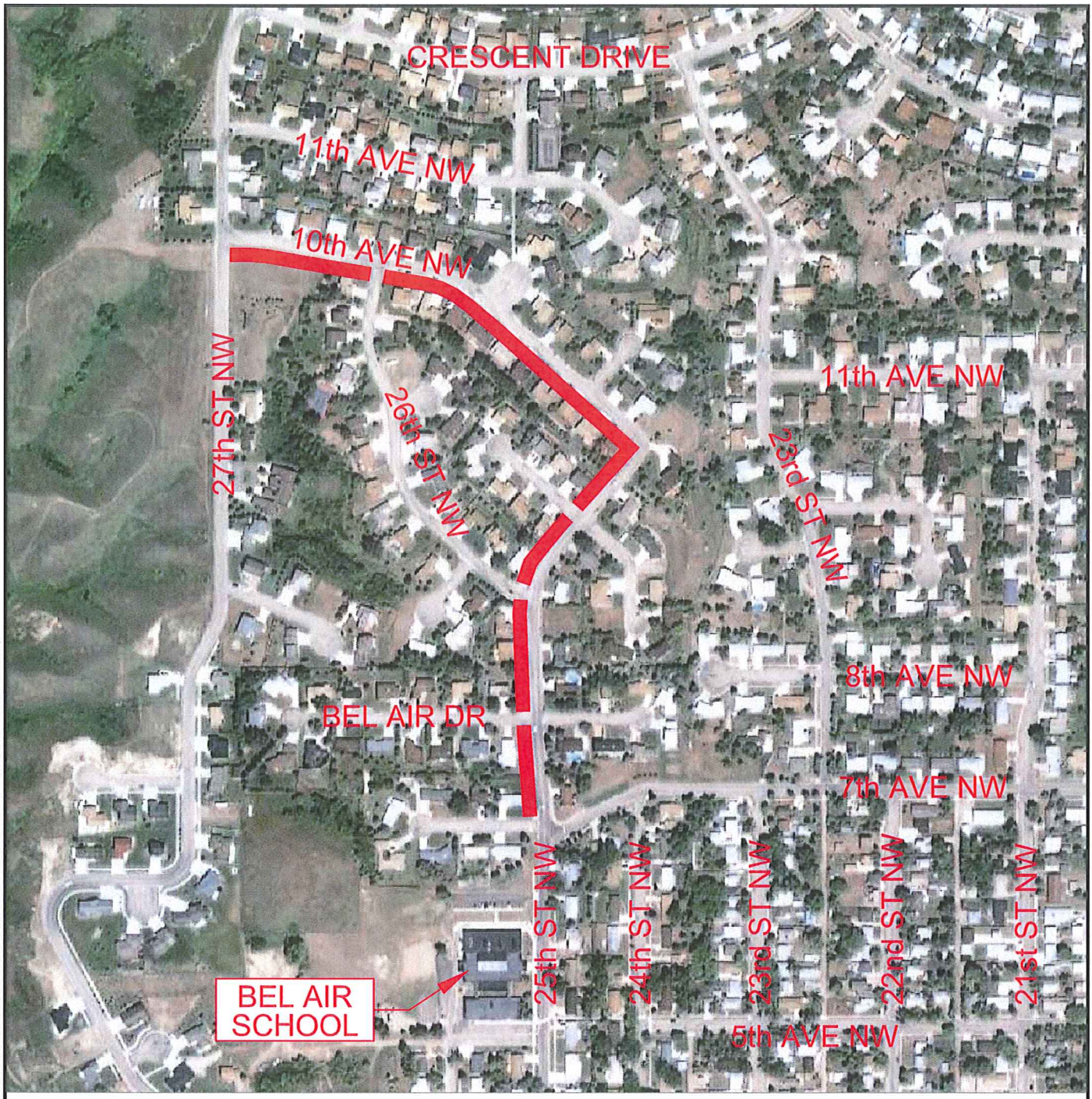


- SAFE ROUTES TO SCHOOL -

PRIORITY #16
ROOSEVELT

SCALE: 1"=400'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=400' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 38



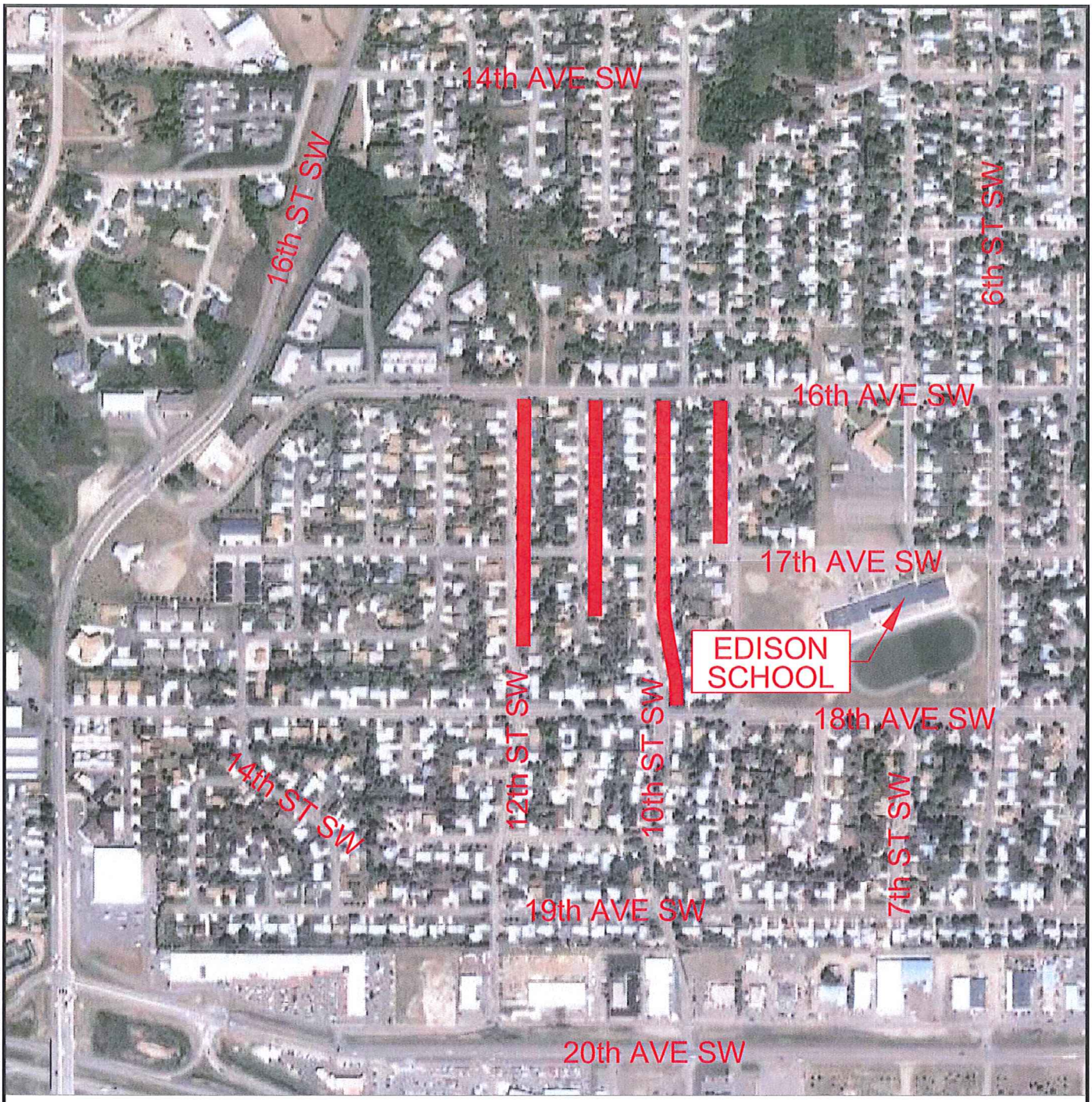
- SAFE ROUTES TO SCHOOL -

PRIORITY #17

BEL AIR

SCALE: 1"=400'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=400' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 39

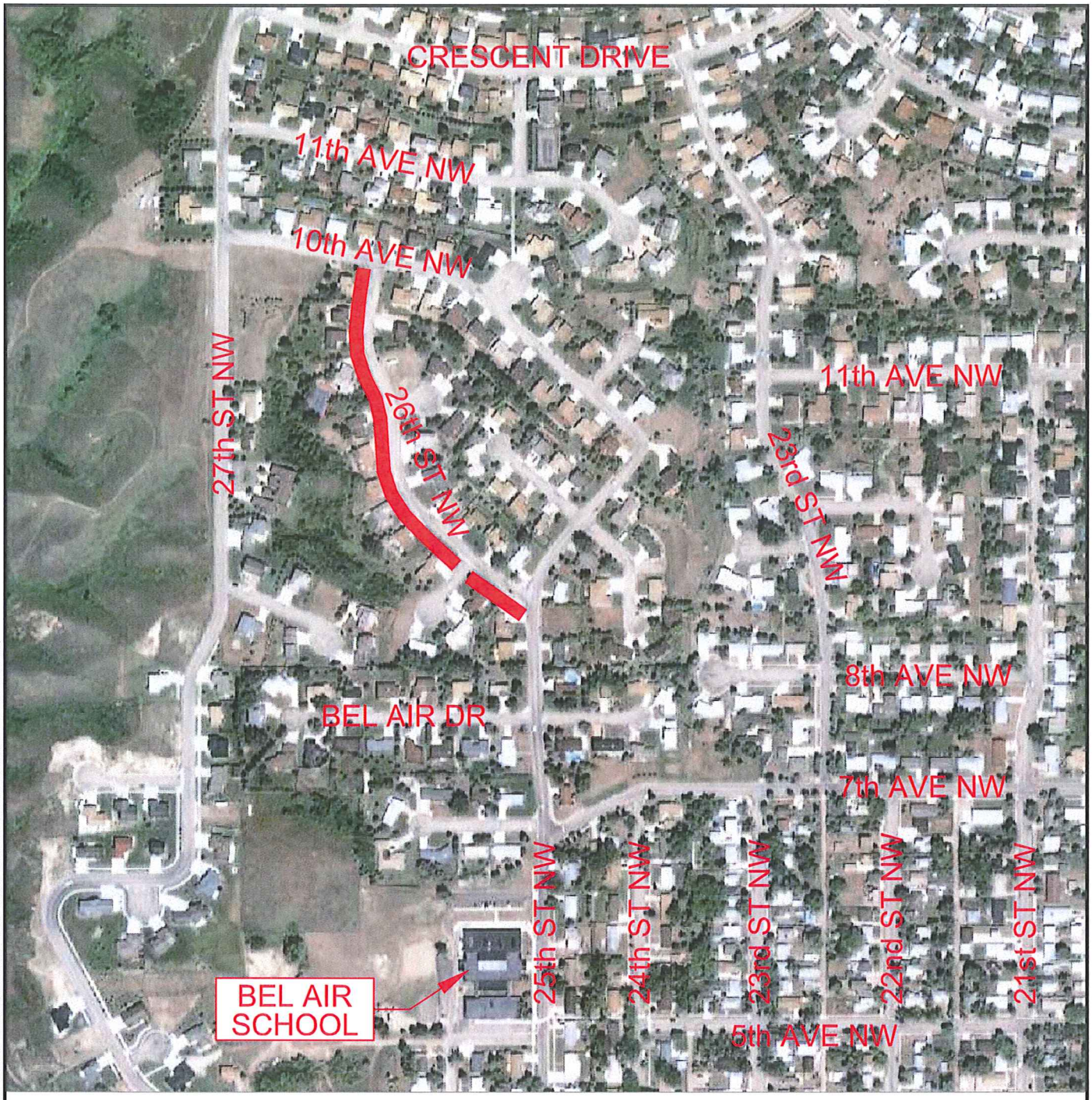


- SAFE ROUTES TO SCHOOL -

PRIORITY #18
EDISON

SCALE: 1"=600'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=600' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 40



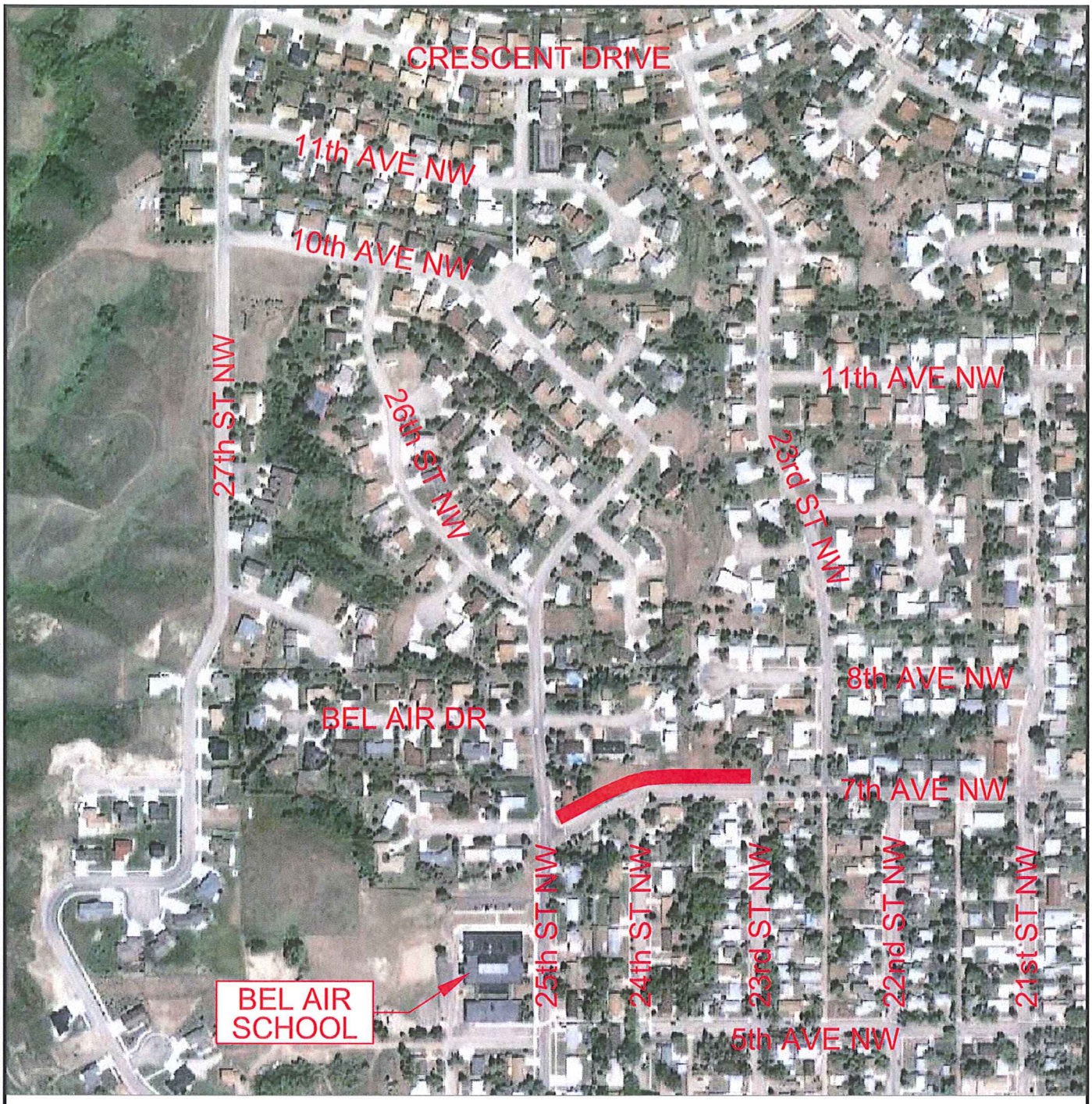
- SAFE ROUTES TO SCHOOL -

PRIORITY #19

BEL AIR

SCALE: 1"=400'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=400' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 41

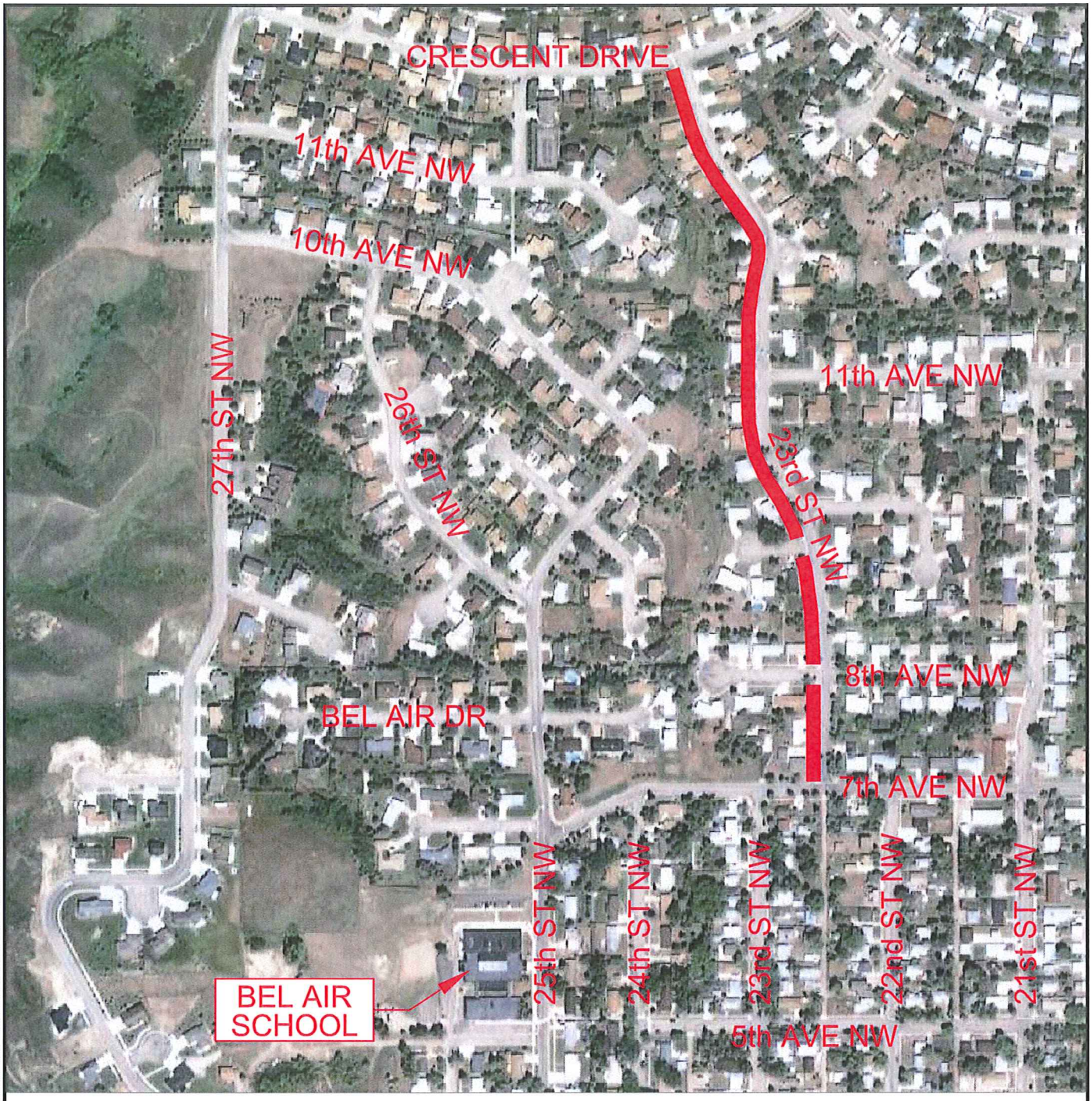


- SAFE ROUTES TO SCHOOL -

PRIORITY #20
BEL AIR

SCALE: 1"=400'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=400' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 42



- SAFE ROUTES TO SCHOOL -

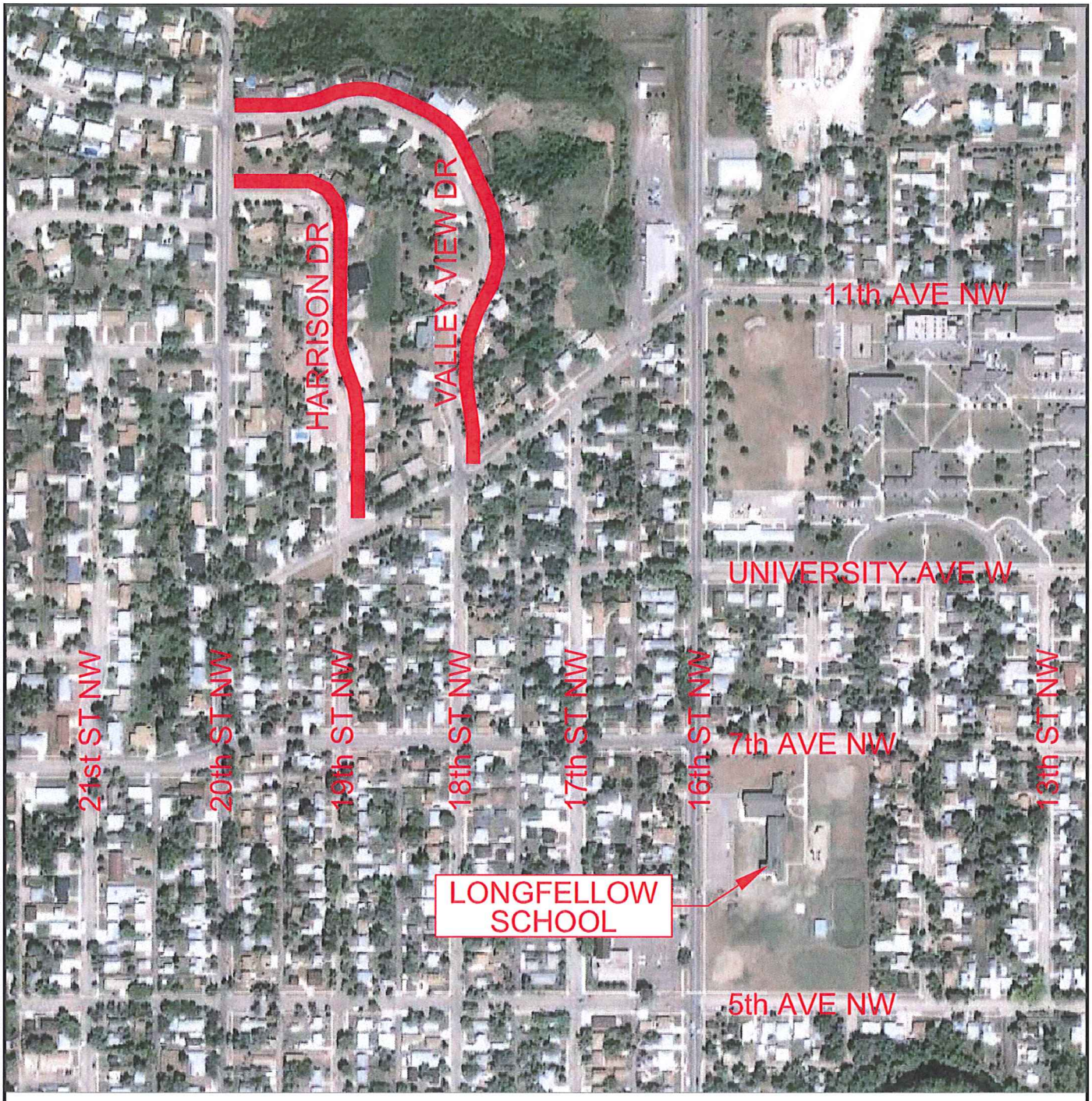
PRIORITY #21

BEL AIR

SCALE: 1"=400'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=400' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 43

6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737
CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION

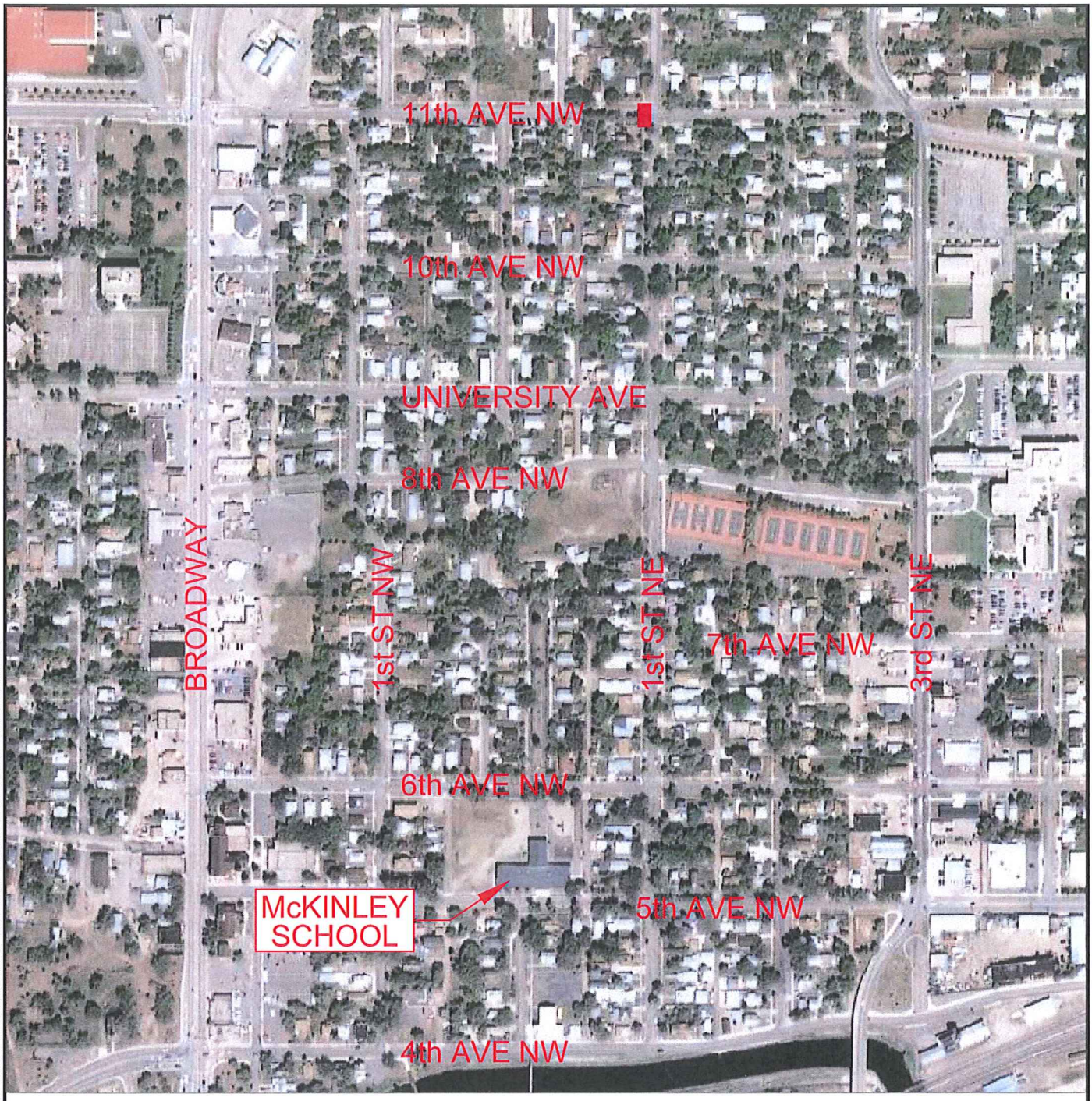


- SAFE ROUTES TO SCHOOL -

PRIORITY #22
LONGFELLOW

SCALE: 1"=400'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=400' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 44



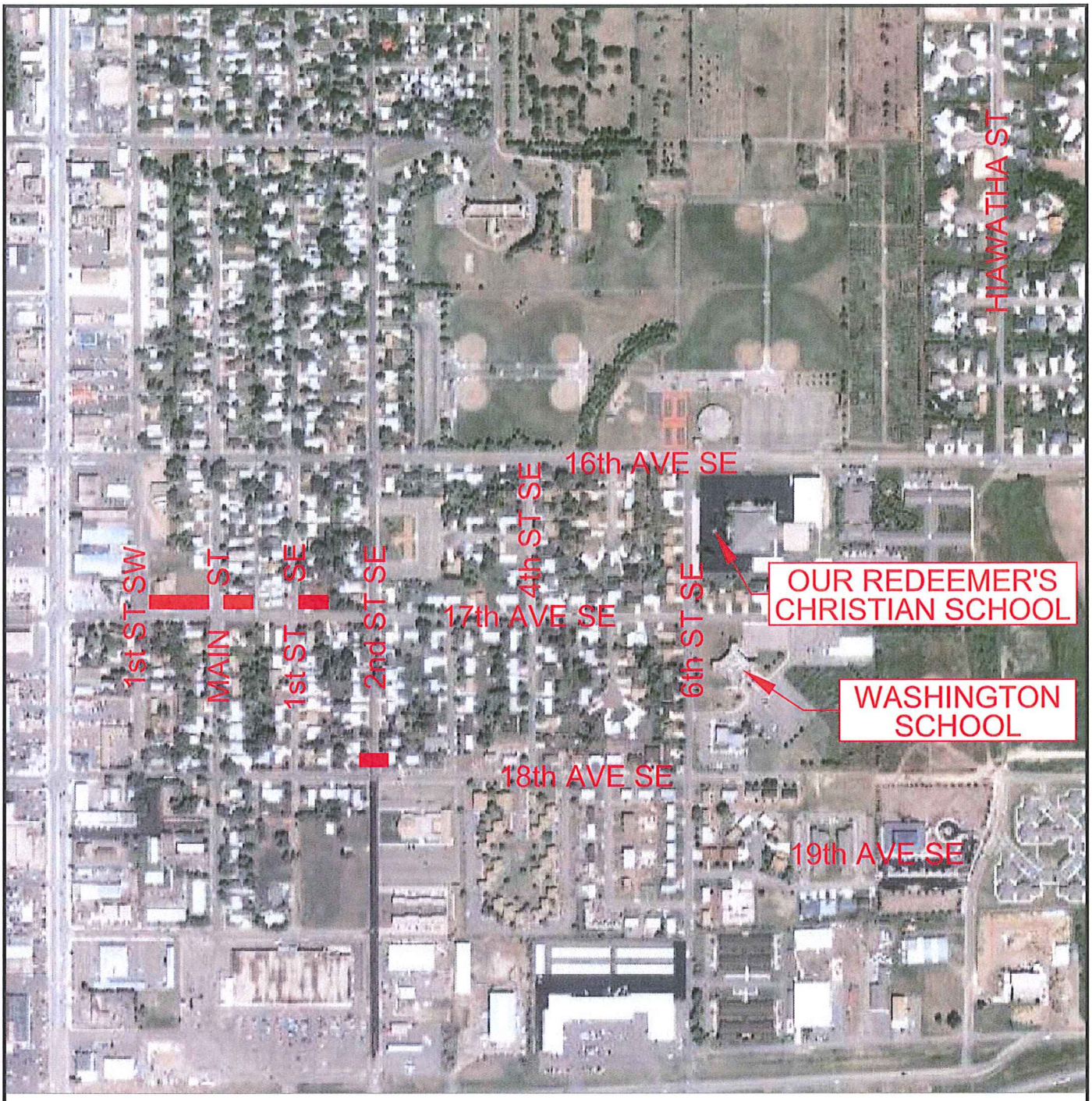
- SAFE ROUTES TO SCHOOL -

PRIORITY #23

McKINLEY

SCALE: 1"=400'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=400' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 45



- SAFE ROUTES TO SCHOOL -

PRIORITY #24
WASHINGTON / ORCS

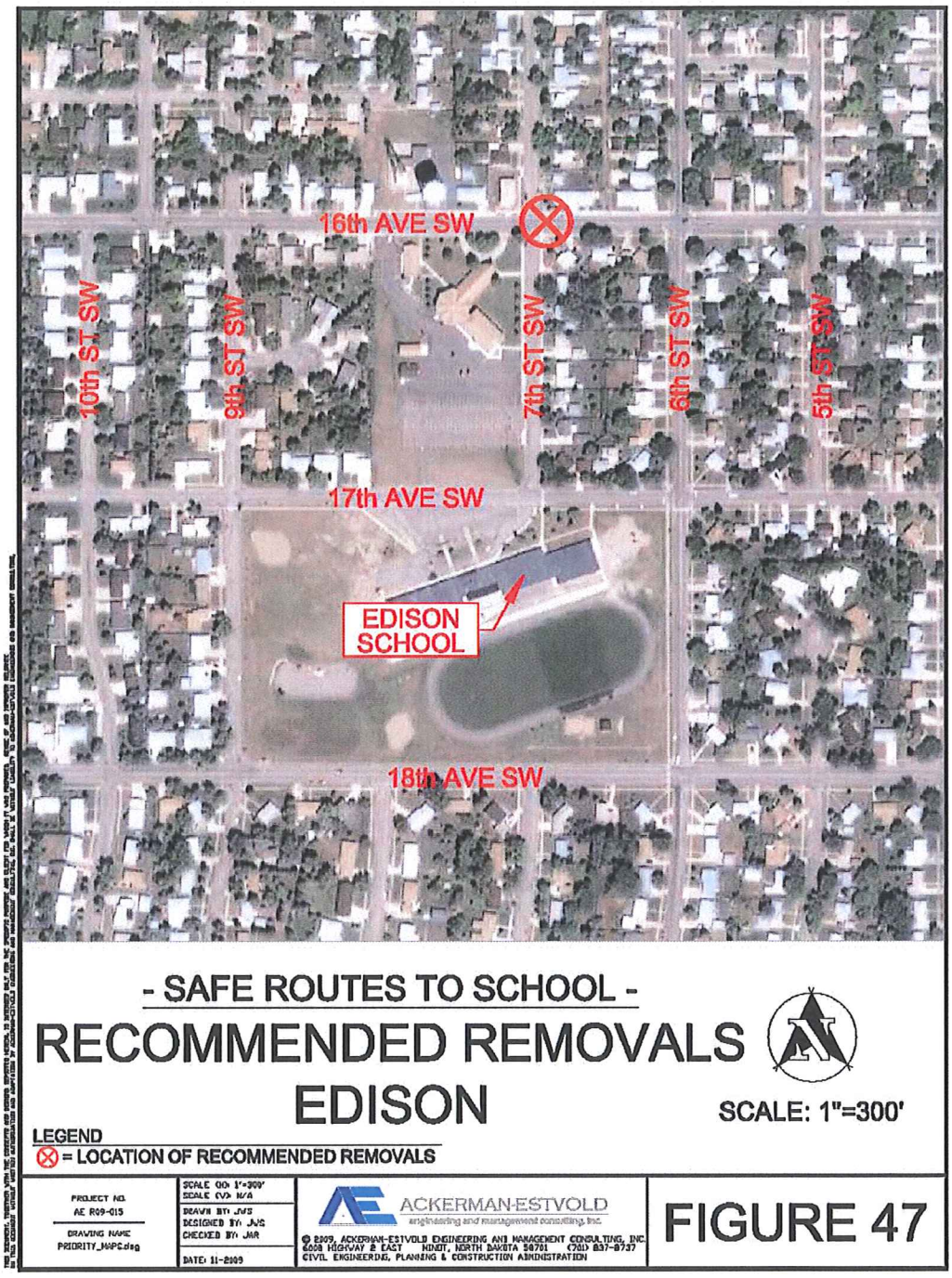
SCALE: 1"=600'

PROJECT NO. AE R09-015 DRAWING NAME PRIORITY_MAPS.dwg	SCALE (H): 1"=600' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 46

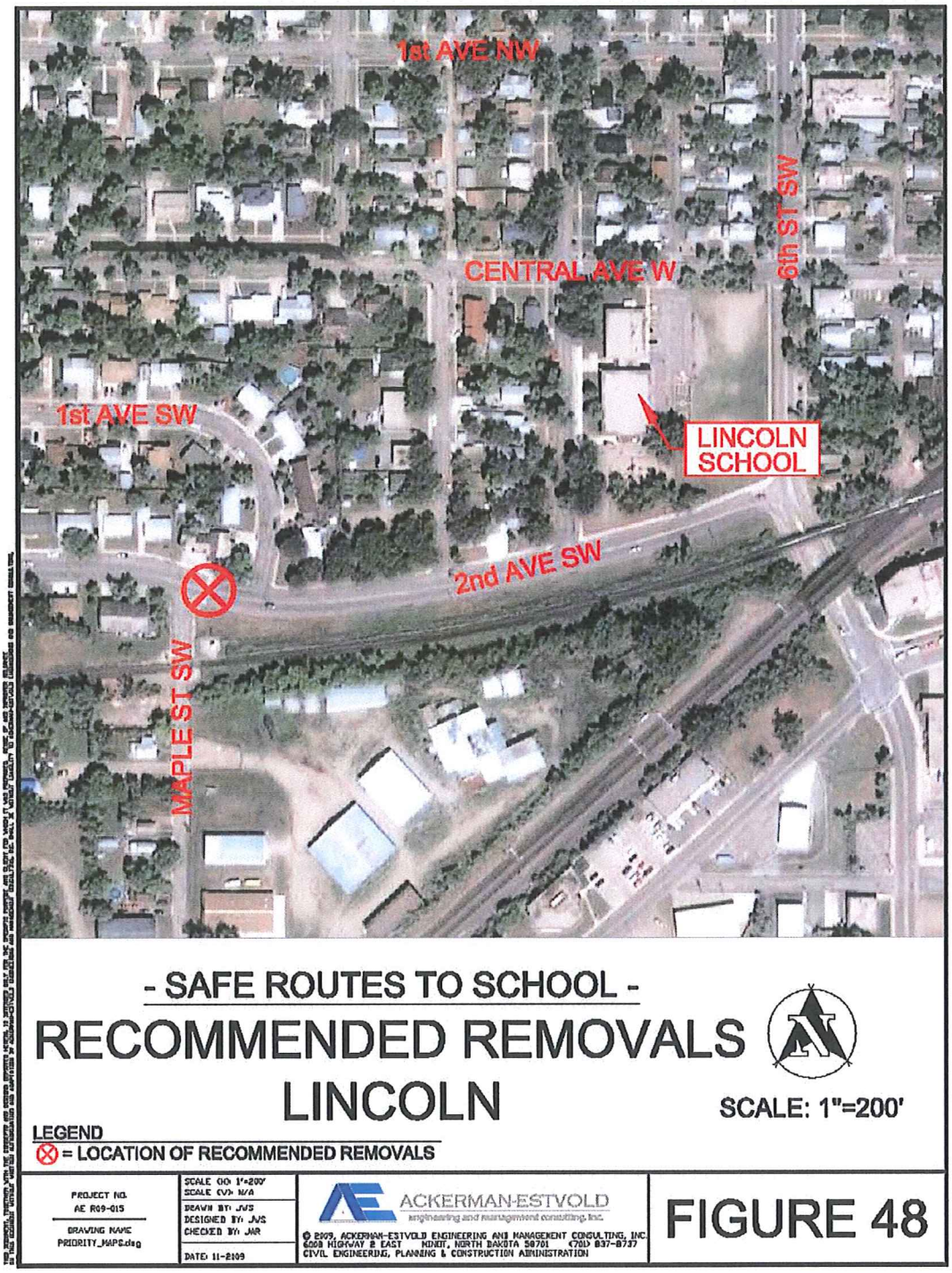
Recommended Crossing Removal

In addition to the minor and major improvements included in Tables 1 and 2, it is recommended that the City consider the removal of two existing school crossings.

The first crossing is located on 16th Avenue SW at 7th Street SW, near Edison School. Although this crossing serves a good purpose at its present location, it is located only one block west of a four-way stop. The four-way stop affords superior crossing protection and the crossing removal would reduce future maintenance costs.



The second crossing recommended for removal is on 2nd Avenue SW at Maple Street, near Lincoln School. At this crossing, there is no sidewalk along Maple Street or along the south side of 2nd Avenue SW. There are very few residential properties south of 2nd Avenue in this area to be served by the crossing. In addition, any student using the crossing has to walk in the street to reach the crossing location, which should not be encouraged along a busy street (2nd Avenue) or a very narrow street (Maple Street).



School Grounds Improvements

Early in the study process, on-site observations were made at all schools during either the morning arrival or afternoon departure time periods. These observations revealed that site design, traffic patterns, parking and other factors have a direct impact on the safety of students. Student drop-off and pick-up at some schools was easy and convenient, while the opposite was true at others. On-site sidewalks and entrance locations at some schools provided a safe and secure path to school from the street or sidewalk, while at others, students were required to cross parking lots or vehicular driving lanes to reach their destination. To address the on-site issues related to school trip safety, it is recommended that the Minot School District evaluate each of the elementary schools with regard to the following items:

- Ensure that adequate off-street parking is provided for faculty and staff
- Provide faculty and staff parking in areas away from pick-up/drop-off lanes and student walking paths
- Provide sidewalks or other clearly identifiable paths for students to enter the school in the safest manner possible
- Place bike racks away from parking areas
- Develop safe and efficient pick-up and drop-off patterns and communicate this information to parents

Bus Routes/Schedules

Survey data and observations, as well as the purpose of encouraging students to walk or bike to school to minimize vehicular traffic surrounding schools, warrants noting that City Bus transportation is important to maintain. It is recommended that the City regularly review bus routes and schedules to ensure that the City Bus is providing safe and convenient service to those who wish to use it. Consequently, it is suggested that shorter bus routes be utilized which would serve only the immediate area around one or two schools and could more closely match beginning and ending school times. It is also important to locate bus stops near or on school grounds so that students have a safe route to/from the school building.

FUNDING SOURCES

Funding for Safe Routes to School improvements is available from a number of sources.

A portion of the City's sales tax revenue is earmarked for infrastructure improvements and could be directed to Safe Routes to School projects. In addition, Safe Routes to School appropriations could be included in the annual City budget.

The Federal Highway Administration's Safe Routes to School program provides federal funding for Safe Routes to School projects. In North Dakota, this program is administered by the North Dakota Department of Transportation. Funding under this program is limited to $150,000 per project and the funds can be used for construction and construction engineering.

The NDDOT also administers the federal Transportation Enhancement program which provides funds for various transportation-related projects such as Shared Use Path construction, historic preservation of transportation-related buildings and landscaping. In some instances, construction of a shared use path may provide part of a Safe Route to School. Federal funds are provided for 80% of the cost of an approved project with 20% of the cost being local responsibility. 100% of engineering costs are also local responsibility.

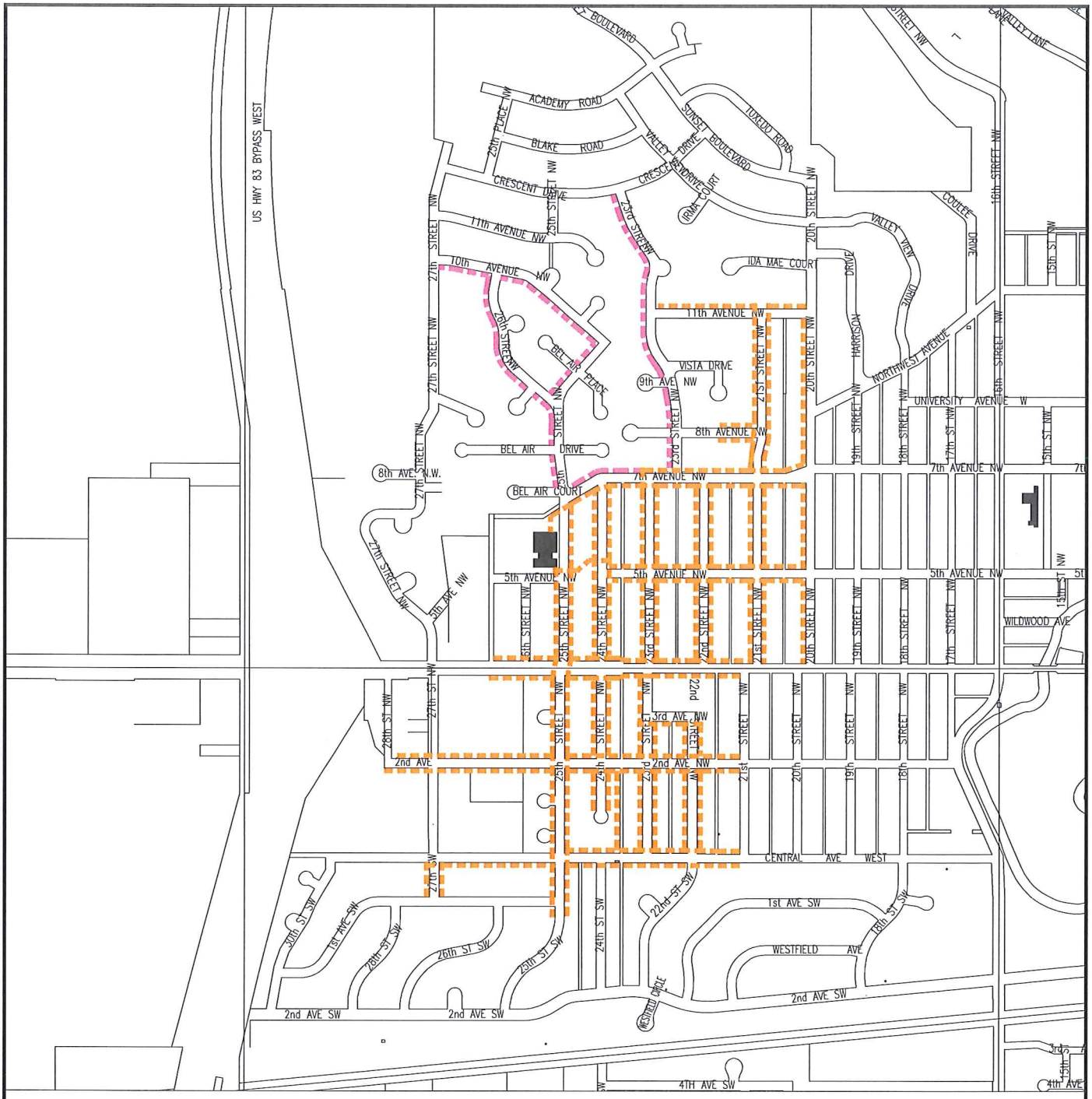
The Minot School District may also be a potential source of funding assistance. Although the school district has not participated in school route type projects in the past, they may see sufficient benefit on a future project to consider doing so.

The North Dakota Safety Council's Safe Kids North Dakota coalition has programs such as Pedestrian Safety and Safety In and Around Cars that may be worth looking into for some non-engineering improvements like education and encouragement.

Non-governmental funding may also be available through various Minot community resources; this private sector funding may include corporations or businesses, foundations, PTA groups, individuals, or through special Safe Routes to School themed events.

COMPREHENSIVE SAFE ROUTES TO SCHOOL PROGRAM

If the recommended improvements are completed, infrastructure surrounding the schools will provide numerous safe routes allowing students to walk and bike to school more safely. The following figures show both the existing and future safe routes to each school should the recommendations be implemented.



- FUTURE SAFE ROUTES TO SCHOOL NETWORK -

BEL AIR SCHOOL

LEGEND

= EXISTING SAFE ROUTE

= FUTURE SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. © 2009, ACKERMAN-ESTVOLD ENGINEERING AND MANAGEMENT CONSULTING, INC. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION

FIGURE 49

- FUTURE SAFE ROUTES TO SCHOOL NETWORK -

EDISON SCHOOL

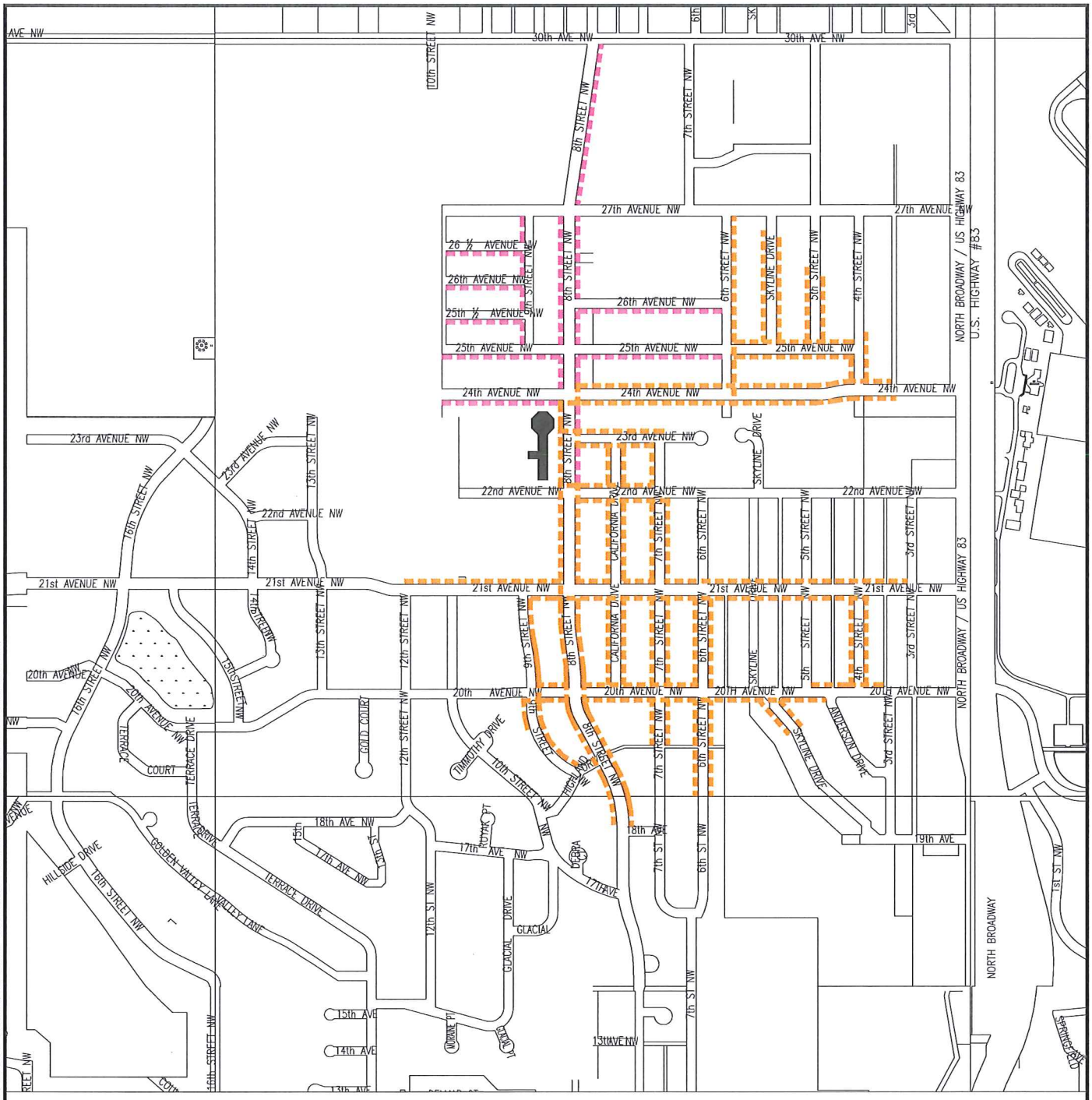
LEGEND

= EXISTING SAFE ROUTE

= FUTURE SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.	FIGURE 50



- FUTURE SAFE ROUTES TO SCHOOL NETWORK -

LEWIS & CLARK SCHOOL

LEGEND

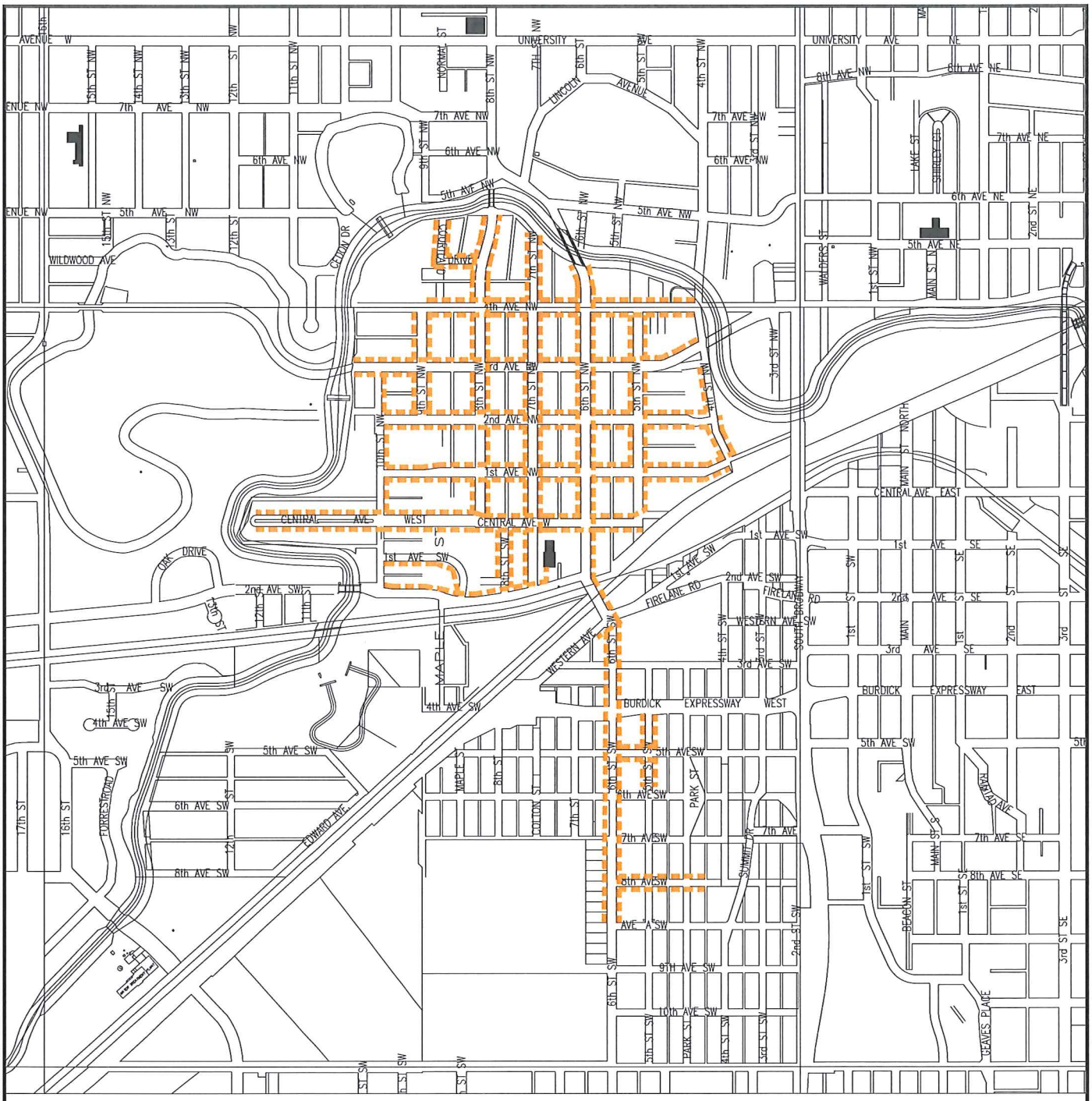
= EXISTING SAFE ROUTE

= FUTURE SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION

FIGURE 51



- FUTURE SAFE ROUTES TO SCHOOL NETWORK -

LINCOLN SCHOOL

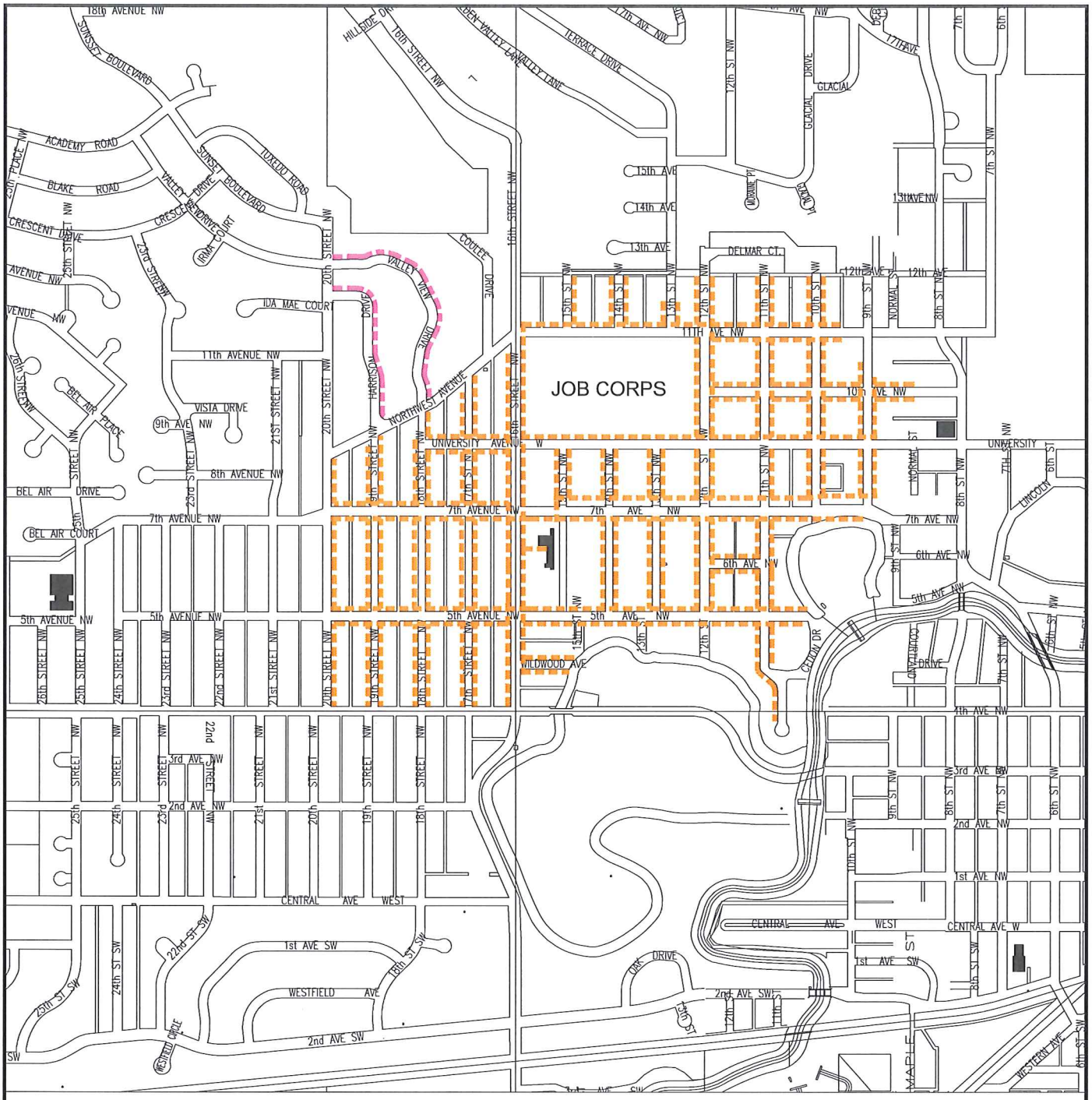
LEGEND

= EXISTING SAFE ROUTE

= FUTURE SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION	FIGURE 52



- FUTURE SAFE ROUTES TO SCHOOL NETWORK -

LONGFELLOW SCHOOL

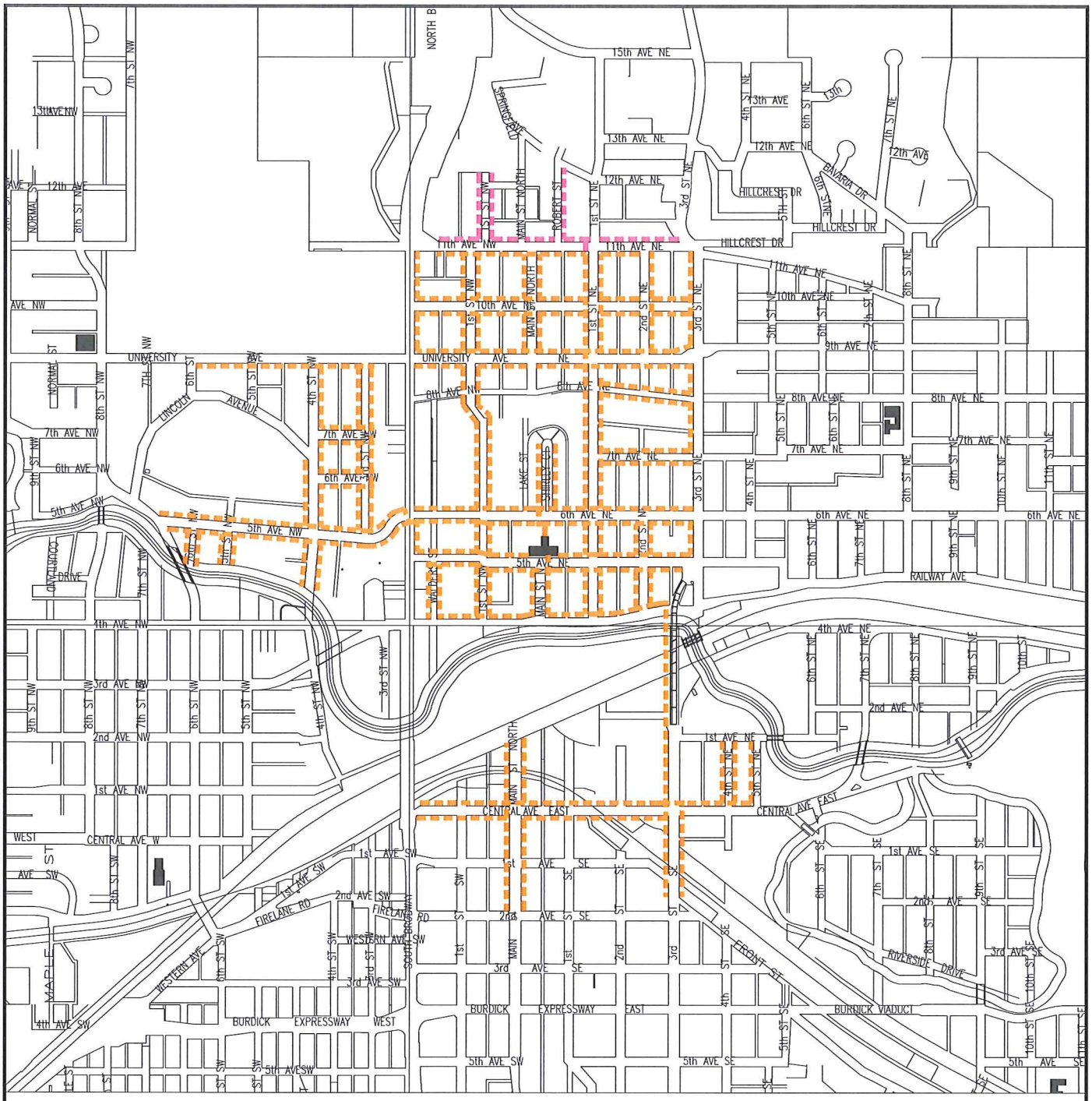
LEGEND

= EXISTING SAFE ROUTE

= FUTURE SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION	FIGURE 53



- FUTURE SAFE ROUTES TO SCHOOL NETWORK -

McKINLEY SCHOOL

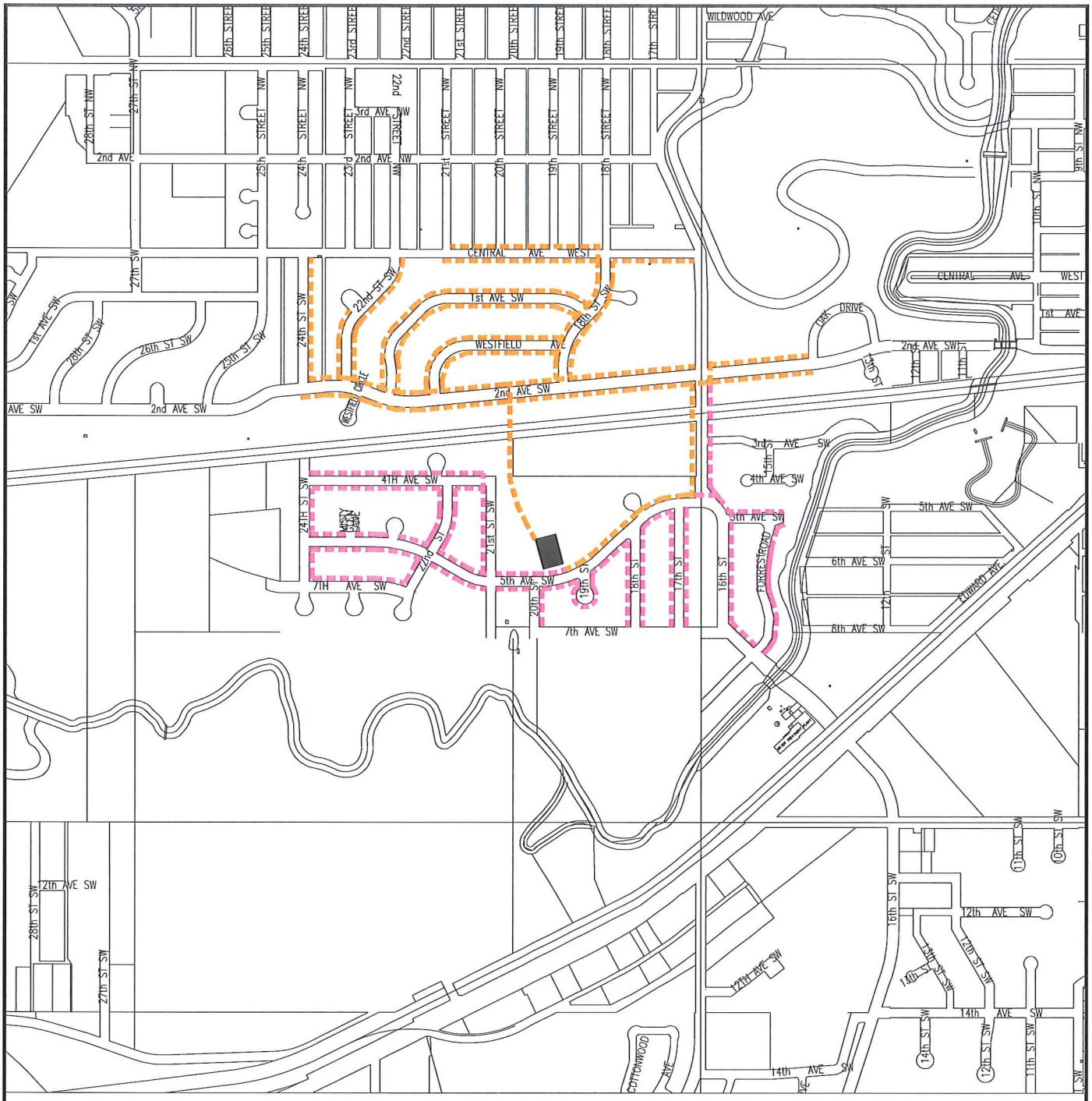
LEGEND

= EXISTING SAFE ROUTE

= FUTURE SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION	FIGURE 54



- FUTURE SAFE ROUTES TO SCHOOL NETWORK -

PERKETT SCHOOL

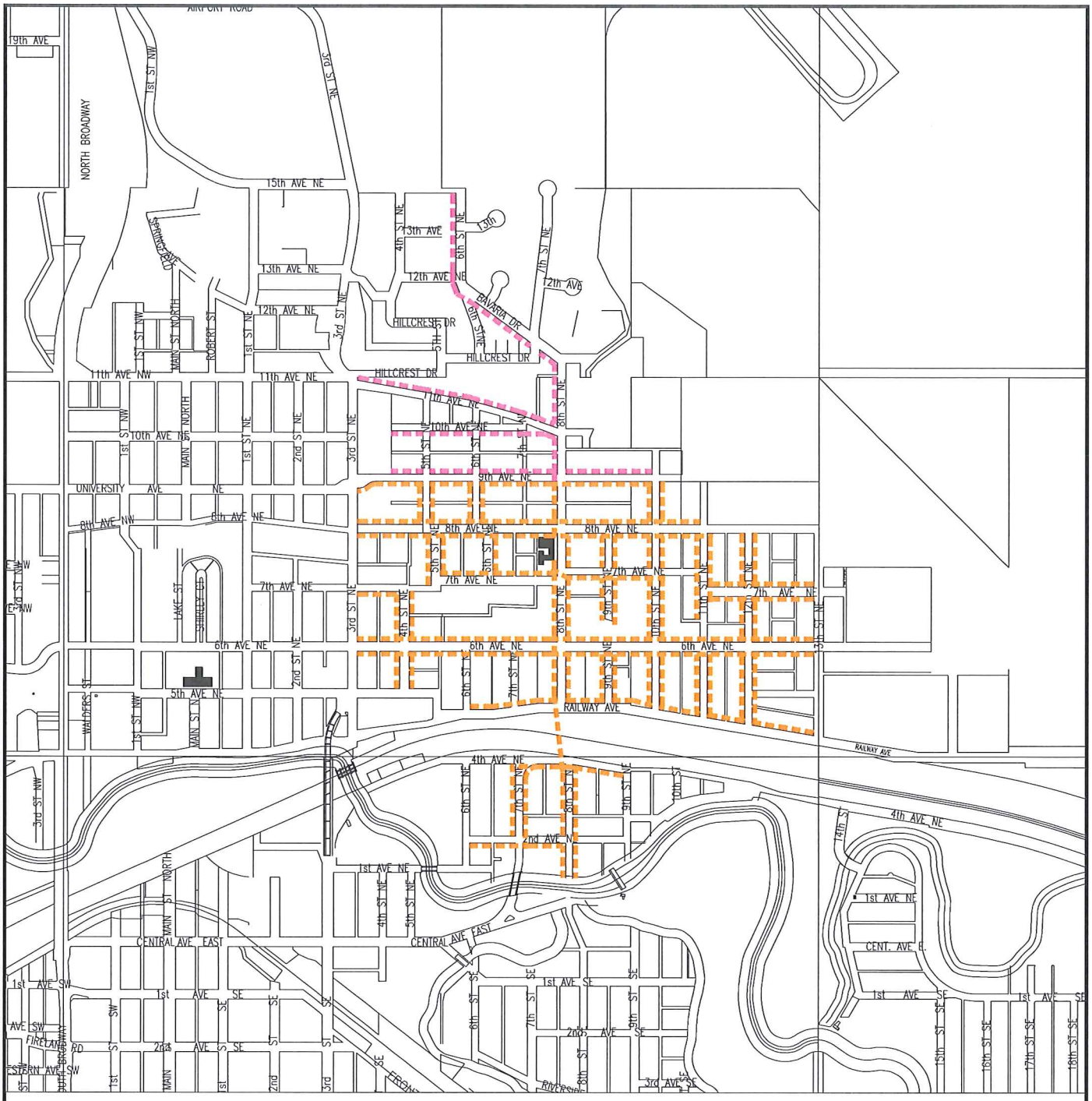
LEGEND

= EXISTING SAFE ROUTE

= FUTURE SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION	FIGURE 55



- FUTURE SAFE ROUTES TO SCHOOL NETWORK -

ROOSEVELT SCHOOL

LEGEND

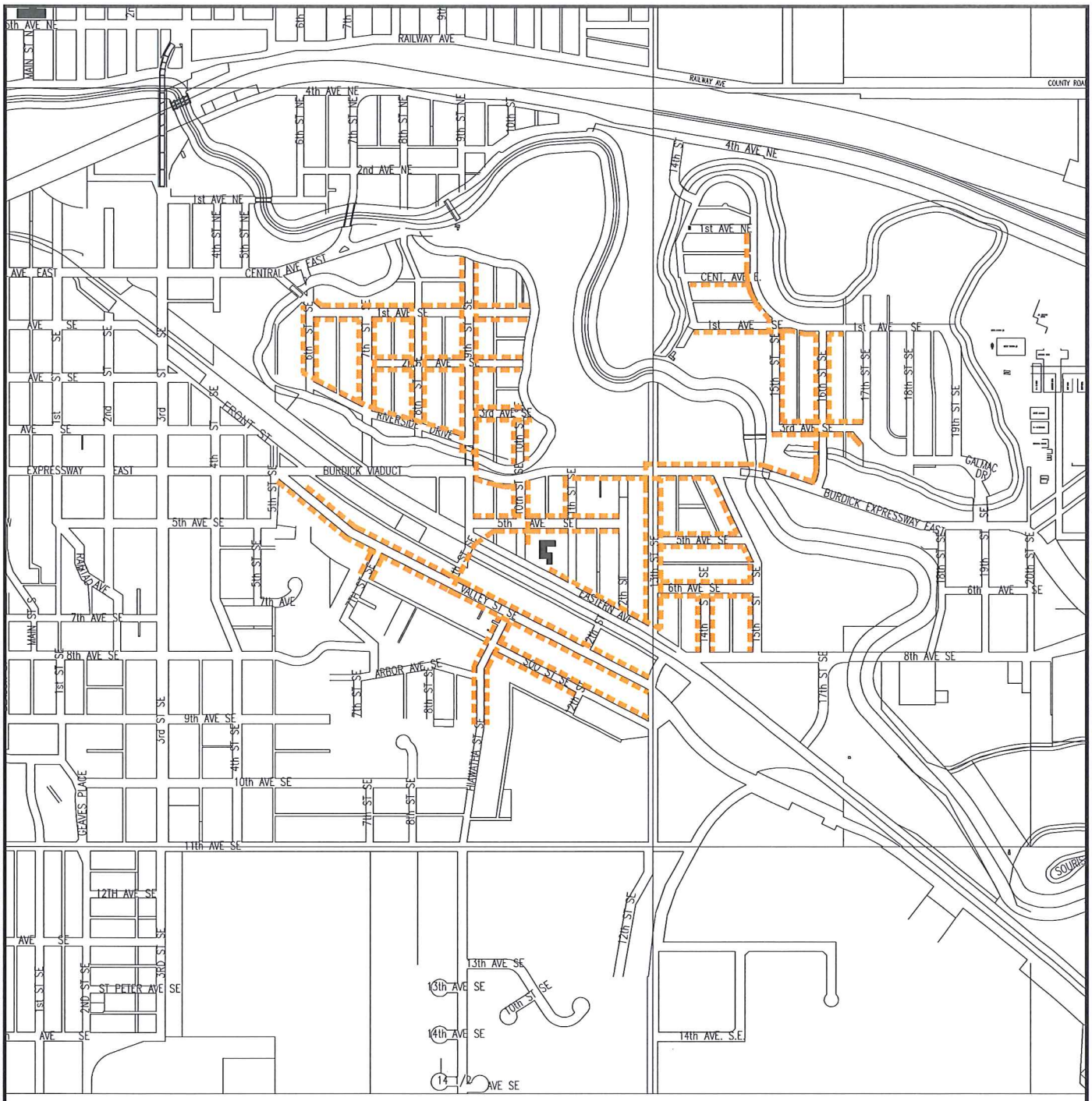
= EXISTING SAFE ROUTE

= FUTURE SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION

FIGURE 56



- FUTURE SAFE ROUTES TO SCHOOL NETWORK -

SUNNYSIDE SCHOOL

LEGEND

= EXISTING SAFE ROUTE

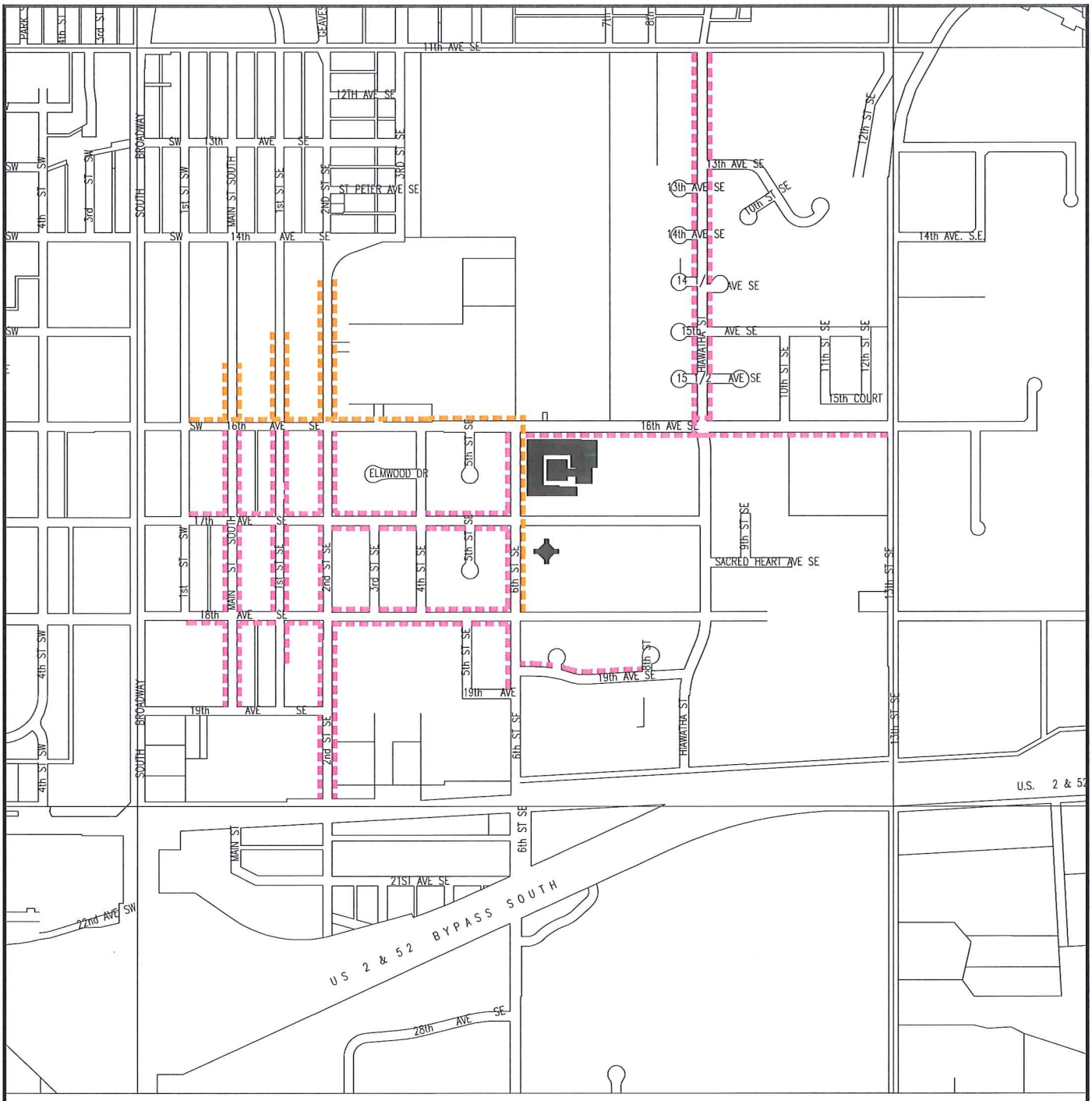
= FUTURE SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc.

6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737
CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION

FIGURE 57



- FUTURE SAFE ROUTES TO SCHOOL NETWORK -

WASHINGTON / ORCS SCHOOL

LEGEND

= EXISTING SAFE ROUTE

= FUTURE SAFE ROUTE

SCALE: 1"=1000'

PROJECT NO. AE R09-015 DRAWING NAME SCHOOL_MAPS.dwg	SCALE (H): 1"=1000' SCALE (V): N/A DRAWN BY: JWS DESIGNED BY: JWS CHECKED BY: JAR DATE: 11-2009	ACKERMAN-ESTVOLD engineering and management consulting, inc. 6008 HIGHWAY 2 EAST MINOT, NORTH DAKOTA 58701 (701) 837-8737 CIVIL ENGINEERING, PLANNING & CONSTRUCTION ADMINISTRATION	FIGURE 58

Although this study focused on infrastructure improvements relating to safe routes to school, the most successful way to increase walking and biking to school is through a comprehensive approach that includes engineering, education, enforcement, encouragement, and evaluation.

As this study indicates, engineering improvements create operational and physical improvements to the infrastructure surrounding the schools. Education programs teach children about the variety of transportation choices and how to safely walk and bike to school; work with the local school system to develop education programs that will help educate elementary children. Partnering with local law enforcement to ensure that traffic laws are obeyed in the school zones is part of the enforcement component; for example, development of a crossing guard program could be a joint effort among law enforcement, schools, and city staff. Creating activities and events to promote walking and biking to school will encourage students and parents to change their habits. And, finally, continual evaluation of infrastructure and safe routes to school programs will keep interested parties informed of progress.

The Safe Routes to School application that requested funding for this study stated that the Minot Safe Routes to School Study was to focus on the engineering component of the safe routes program. The application also included the following statement regarding the remaining components:

> The City of Minot, Minot Public Schools, and the Safe Communities of North Central Dakota program will partner to:
>
> 1. Teach children about transportation choices, including the benefits of walking or bicycling to school, and hosting safety campaigns.
> 2. Ensure traffic laws are obeyed around schools and educate students and parents.
> 3. Develop community events and activities, utilizing local media and other resources, to promote walking and bicycling to school.
> 4. Monitor programs and collect data.

Utilizing the results of this study and moving forward with the aforementioned partnership ideas related to education, enforcement, encouragement, and evaluation will make for a successful local Safe Routes to School program.

APPENDIX I – Additional Information

Minot Safe Routes to School
Student Arrival and Departure Tally Sheet

School Name: _____

Teacher: _____ Grade (K-6): _____

Monday's Date: ___ / ___ / 2 0 ___ (M M / D D / Y E A R)

# of students enrolled in class: _____

Instructions for using this form:

* Please conduct these counts on **any two days from Tuesday, Wednesday, or Thursday of the assigned week.** Only two days worth of counts are needed, but counting all 3 provides better data.
* **Please do not conduct these counts on Mondays or Fridays.**
* Before asking your students to raise their hands to indicate the *one answer* that is correct for them, read through all potential answers so they will know what the choices are.
* Ask your students as a group the question **"How did you arrive at school today?"**
* Read each answer and record the number of students that raised their hands for each.
* **Place just one character or number in each box.**
* Follow the same procedure for the question **"How do you plan to leave for home after school?"**
* Please conduct this count regardless of weather conditions (i.e. ask these questions on rainy days, too).

Step 1. Fill in the weather conditions and number of students in class each day.				Step 2. Ask students **"How did you arrive at school today?"** and **"How do you plan to leave for home after school?"** (record number of hands for each answer)									
	Weather S=sunny R=rainy C=cloudy Sn=snow	**# of students in class when count made**		**Walk**		**Bike**		**Bus**		**Family Vehicle** (only with children from your family)		**Carpool** (riding with children from other families)	
SAMPLE	S	2	0		4		2		0	1	1		3
Tues AM													
Tues PM													
Wed AM													
Wed PM													
Thur AM													
Thur PM													
Have you *ever* walked to school? Record number of students answering 'yes.'													

Comments (List disruptions to counts or any unusual travel conditions to/from the school on the days of the tally):

Thank you for helping gather this information!

Additional Survey Data

CITY-WIDE AVERAGE

Walk	Bike	Bus	Family Vehicle	Carpool
17%	**4%**	**5%**	**69%**	**6%**

AVERAGE BY GRADE

	Walk	Bike	Bus	Family Vehicle	Carpool
K	10%	2%	2%	79%	6%
1	15%	2%	5%	72%	6%
2	16%	2%	5%	70%	6%
3	15%	4%	5%	72%	4%
4	20%	4%	7%	62%	7%
5	23%	9%	4%	61%	5%
6 (one school)	8%	0%	6%	72%	14%

AVERAGE BY SCHOOL

	Walk	Bike	Bus	Family Vehicle	Carpool
Perkett	16%	6%	6%	58%	13%
Edison	16%	3%	6%	67%	8%
Roosevelt	17%	6%	1%	76%	0%
Bel Air	18%	5%	3%	66%	6%
Lewis and Clark	17%	5%	3%	72%	2%
Lincoln	16%	2%	0%	81%	2%
Sunnyside	12%	5%	16%	64%	5%
Longfellow	20%	2%	3%	69%	6%
McKinley	29%	7%	1%	59%	8%
Our Redeemers	4%	0%	9%	80%	8%

Safe Routes to School Study

School Observation Summary

School:_____ Date:_____ Time:_____

Observer:_____

1. Narrative describing observations at beginning or ending of school day. Include observed congestion, obvious problem areas, obvious areas of conflict(vehicle-pedestrian), etc.

2. What is the primary drop-off location for parents transporting students?

3. Are there secondary drop-off locations?

4. Where is the primary school entrance for students?

5. Are there secondary entrance locations for students?

6. Are there any obvious impediments to children walking to school?

7. Where is the bike rack located?

8. Where does the City Bus drop off passengers?

9. Any other comments.

School Enrollment / Grade Distribution

Minot Public Schools: 2008/2009 data
Our Redeemers Christian School (ORCS): 2009/2010 data

School	Kind	1st	2nd	3rd	4th	5th	6th	Pre-school/ Special Ed	Total # Kids	# Class-rooms	Before/ After Program
Bel Air	58	47	52	40	41	48			286	17	X
Edison	59	56	62	54	48	61			340	19	
Lewis & Clark	59	56	62	54	48	61			340	18	X
Lincoln	33	31	20	28	38	25			175	10	X
Longfellow	36	38	31	30	31	41			207	12	X
McKinley	22	21	17	20	14	21		14	129	8	X
Perkett	37	31	28	31	37	21		33	218	13	
Roosevelt	19	25	17	21	14	25		12	133	7	X
Sunnyside	47	48	37	35	36	43		31	277	15	X
Washington	80	75	65	55	58	54			387	19	X
ORCS	26	15	14	21	11	21	12	72	192	9	
TOTALS	**476**	**443**	**405**	**389**	**376**	**421**	**12**	**162**	**2684**	**147**	

School Schedules

Minot Public Elementary Schools: 8:45am – 3:00pm
Before/After School Program: 7:00am – 6:00pm

Our Redeemer's Christian School:
Elementary (K-6): 8:30am – 3:15pm
High School (7-12): 8:20am – 3:15pm